ESSAYS ON WELL-BEING AND DEVELOPMENT

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Dedication page

To my wife, Yoga, my daughter, Bhavya, and my son, Bhaavan, for their love, unwavering support, patience, and encouragement over the years.

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Abstract

The study of happiness, life satisfaction, or subjective well-being has gained considerable traction from economists over the past two decades. Happiness research is important because the ultimate goal of most human beings is to be happy. This dissertation offers three essays on well-being and economic development. Throughout this dissertation, I use the terms happiness, life-satisfaction, and subjective well-being interchangeably.

The first essay applies data from the World Values Survey for 90 countries to study the relationship between education levels and well-being. Results suggest that education has a monotonically positive relationship with well-being across countries. The magnitude of the direct effect of education on well-being is bigger in low-income countries than in middle-and high-income countries, and larger for females than males. Although the economic significance of the direct effect of education on well-being appears to be relatively small, its effect via income is bigger. The magnitude of the indirect effect of education on well-being through income is larger in developing countries than in developed countries. The study finds that the direct effect of education on well-being has decreased significantly over time.

The second essay uses cross-sectional individual-level data from the World Value Survey to explore the well-being of self-employed women around the globe. The paper also provides new evidence on the relationship between various non-economic factors and the well-being of self-employed women and self-employed men. The study finds that women, in general, are happier than men across countries, but the well-being of self-employed women, especially in developing countries, is lower than the well-being of self-employed men. Female entrepreneurs experience lower well-being than male entrepreneurs in rural areas, especially in developing countries. Results

show that various non-economic factors have a differential influence on the well-being of male and female entrepreneurs. Specifically, my study finds that non-economic factors, like lack of self-confidence to run a business, stricter adherence to social norms, and the presence of young children lowers the well-being of self-employed women more than self-employed men. Results also suggest that that better-educated self-employed women are happier than self-employed men.

The third essay explores the relationship between the business environment and the happiness of entrepreneurs around the world using country-level data from the World Bank and the Gallup World Poll. Results show that entrepreneurs are happier in countries with a better business environment. Results suggest that they can reap better benefits of self-employment when it is easier and more efficient to operate their business. These results are robust to controlling for a variety of other country features. The study finds that entrepreneurs are happier, as compared to non-entrepreneurs in the environment with higher unemployment likely because of added stability and independence of their occupational choice. These results shed new light on the happiness of entrepreneurs.

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Chapter 1
Education and Well-being

1.1 Introduction

The study of happiness, life satisfaction, or subjective well-being has gained considerable traction from economists in recent decades. The well-being studies have become a beacon in policy analyses[1]. For example, Easterlin (1974) suggested that the primary objective function to be maximized by policymakers should be happiness rather than economic growth, income, or consumption. In the early 1970s, the fourth king of Bhutan enunciated the concept of "Gross National Happiness" as an alternative to the pursuit of economic growth for his country (Ura and Galay, 2004)[2]. In 2011, the United Nations General Assembly unanimously recognized happiness as the "fundamental human goal and universal aspiration" (Assembly U.G, 2011). Happiness research is important because the ultimate goal of most human beings is to be happy (Clark et al., 2018; Lane, 2017; Layard, 2011; Frey, 2008).

For a long time, the relation between income and happiness or well-being has been one of the most discussed and debated topics in the literature on subjective well-being (Clark et al., 2018; Adelmann, 1987; Diener, & Diener, 1995). On the other hand, a substantial literature has emerged to claim that income correlates only weakly with individual well-being so that continuous income growth does not lead to ever-happier individuals. Easterlin et al. (2010) showed that economic growth does not raise well-being. Beyond GDP, there are other significant factors, including leisure, inequality, education, and mortality affecting living standards within a country that are

[1] In keeping with much of the economic literature, I use the terms life satisfaction, happiness, and subjective well-being interchangeably (see Easterlin, 2011, Easterlin et al., 2001 for details).
[2] The concept of Gross National Happiness implies that sustainable development should take a holistic approach towards notions of progress and give equal importance to non-economic aspects of well-being (Ura and Galay, 2004)

incorporated imperfectly in GDP (Jones et al., 2016; Di Tella et al., 2005). "The time is ripe for our measurement system to shift emphasis from measuring economic production to measuring people's well-being" (Stiglitz et al., 2009). However, the topic of well-being determinant is still a source of discussions and have gained increasing prominence in social science, rigorously debated by researchers and policymakers at large.

One of the policy-relevant relationships that have received less attention in the literature is the one between education and well-being. Educational expansion is one of the most apparent, enduring, and consequential features of modern society (Brand and Xie, 2010; Castriota and Stefano (2006). The idea that education should equip people to lead flourishing lives and help others to do so is now becoming a salient in policy-making circles (White, 2007).

Broadly, economists have divided the total effects- returns- of education on well-being into two categories. First, the *direct effect* of education on well-being: education results in more knowledge and skills, which may affect well-being directly. Since knowledge and skills are hard to measure, the direct effect of education on well-being can be captured by holding all observable variables constant[3]. Second, the *indirect effects* of education on well-being operates via observable explanatory variables that education affects, and that then affects well-being[4]. For example, education may lead to better job quality, higher income, better health, which in turn may lead to higher well-being. It is also possible that education may improve a person's chances of being employed and married[5]. In this paper, I refer to the effects of education through higher income as the *income benefit* and the effect of education through other observable variables, such as employment, the number of children, and marital status as *non-income benefits* to education[6].

[3] In this paper, I estimate the direct benefit of education by controlling observable variables that are available in my datasets, such as household income, employment status, marital status, health status, and the number of children.
[4] Appendix A.3 provides a detailed discussion of the econometric approach and the model used to estimate the direct and indirect effect of education on well-being.
[5] While the list of indirect benefits of education is by no means exhaustive, but in this paper, I can only measure the indirect benefits of education via few observable variables, such as the number of children, unemployment status, marital status, and household income.
[6] Appendix A.3 provides a detail discussion on the econometric model used to estimate the direct and indirect effect of education on well-being.

A handful of papers provide evidence on the well-being and education that focuses on one country or one region, and the empirical results are mixed. Some studies find a positive relationship (Clark et al., 2018; Salinas-Jimenez et al., 2013; Ross and Van Willigen, 1997), while others find negative or no association between education and well-being (Cunado et al., 2012; Castriota Stefano, 2006). Thus, a priori is not apparent whether a higher level of education increase well-being. Moreover, there is a lack of evidence on how the benefits of education vary across countries with different income levels. My study provides new evidence from a global perspective and fills this gap in the literature.

I have four main goals for this paper. My first goal is to investigate how education affects well-being. To answer this question, I explore the direct and indirect benefits of education, focusing on income and non-income benefits. My second goal is to examine how the benefits of education differ across countries with different levels of economic development. My third goal is to investigate how the relationship between education and well-being changes over time. It is likely that over the years, because of the escalating supply of more educated people, the same level of education that once seemed satisfactory may result in less well-being. Thus, it is interesting to see how the association between education and well-being changes over time. My final goal is to explore the relationship between education and well-being across gender and urban and rural areas.

I use the World Values Survey (WVS), which is an extensive cross-country database that contains individual data on well-being, as well as other personal characteristics. There are three main reasons to use WVS data for this analysis. First, WVS data has been widely used and validated by various research in well-being (Sacks et al., 2013; Del Mar Salinas-Jiménez, 2013; Peiro, 2006; Blanchflower and Oswald, 2004). Second, it provides the most extended dataset on well-being and other individuals' characteristics, such as age, marital status, gender, employment status, household income, and education level. Third, the WVS survey covers a broad set of countries at different levels of economic development. These unique features of this dataset are well-suited for this paper.

I have several main findings. First, this study finds that the direct effect of education on well-being is positive, ceteris paribus. Specifically, as compared to the primary educated, the well-

being of secondary and university-educated are higher by 2.9% and 5.7%, respectively, of one standard deviation on well-being measures. Second, although the economic significance of the direct effect of education on well-being appears to be relatively small, its effect via income is bigger. More specifically, when income dummies are removed from my model, respondent's well-being between secondary and primary education; and between the university and primary education increases by 4.8% and 9.8%, respectively, of one standard deviation on the well-being measures. These findings demonstrate that education has a substantial influence on well-being via income. Third, I observe a similar monotonic relationship between well-being and education levels across different groups of countries (high-middle and low-income countries). However, the results are significantly large in low-income countries. Fourth, on average, across all three sets of countries, education has a larger influence on females than males; and in rural areas than in urban areas[7]. However, the magnitude of the direct effect of education on well-being across gender and across regions are larger in low-income countries. Next, the results suggest that the magnitude of income benefit of education is larger (almost double and with stronger statistical significance) in developing countries than in developed countries. It implies that a larger portion of the indirect benefits of education on well-being comes from higher income, especially in developing countries. The results indicate a considerable indirect effect of education on well-being via health, but the results are statistically weak. However, this study does not find any significant indirect benefits of education on marriage, the number of children, or unemployment across all three sets of countries. Finally, the direct effect of education on well-being has decreased significantly over time across countries. The decline in the association between education and well-being over time holds for both females and males.

This essay makes four main contributions to the literature. First, I verify the previous findings on the relationship between education and well-being. Whereas earlier studies focused on a smaller dataset, large samples available for this study allow comparison across countries at different levels of economic development. Second, I investigate the benefits (direct and indirect) of education on well-being and explore whether these benefits differ across countries with different levels of development. Third, I track the relationship between education and well-being over time.

[7] However, the well-being gap between females and males, and between rural and urban areas is statistically insignificant.

Finally, I explore the association between education and well-being across gender and rural and urban areas.

The rest of the paper is organized as follows. Section 1.2 presents a more detailed discussion of previous literature and develops my hypotheses. Section 1.3 describes the data and discuss descriptive statistics. Section 1.4 describes the empirical specification and issues of reverse causality. Section 1.5 presents the main results. Section 1.6 details some limitations of the study and suggests directions for further research. Lastly, the final section concludes the paper.

1.2 Previous literature and hypothesis development

Empirical studies that analyze the benefit of education on subjective well-being across countries are relatively scarce. A handful of papers that provide the relationship between education and well-being focuses on one country or one region. While some studies find a positive relationship, others find negative or no association between education and well-being, a priori unclear. For example, in a British sample, Clark et al. (2018) found a positive but smaller direct influence of education on well-being, and bigger indirect effects via income and other determinants. In Australia, Powdthavee et al. (2015) found that the direct effect of education on life satisfaction is negative, while the indirect impact is positive[8]. Ross and Van Willigen (1997) use the national sample of the U.S. for the year 1995 to examine the relationship between education and varieties of indicators of subjective quality of life. They find education guards against all tested measures of distress, such as anxiety and depression, but education does not guarantee lower levels of dissatisfaction. Cunado et al. (2012) analyze the relationship between educational levels and happiness using data from the European Social Survey for individuals living in Spain. They find no differences in well-being among those with different levels of education[9].

[8] Powdthavee et al. (2015), use data from Household, Income and Labour Dynamics in Australian Survey (HILDA), and estimate the direct and indirect associations between education and life satisfaction through five different adult outcomes: income, employment, marriage, children, and health.

[9] Very few studies, however, have demonstrated the relationship between education and happiness using data from a few different countries. For example, Castriota Stefano (2006) analyze the effect of absolute income on well-being by educational levels. He finds that the marginal utility of additional income is higher for less educated people. Salinas-Jimenez et al., (2013) explore the impact of education on life satisfaction by gender. The authors found the education has a positive effect (both direct and indirect) on women's well-being, while men derive indirect satisfaction from education through occupational and professional status. However, these studies are primarily focused on the relationship between education, income and gender, which is different from my area of focus in this study.

The economic literature generally acknowledges that education is both an investment and a consumption good (Easterlin 2010; Steven and Weales 2004; Schaafsma, 1976). The investment component relates to monetary return in the future and the consumption component is associated with individual utility and satisfaction (Castriota Stefano, 2006). Individuals choose to attend college if the economic returns (expected returns) outweighs the cost (Brand and Xie, 2010). Individuals around the world invest in education to acquire human capital in the hope of greater lifetime wealth, consumptions and good return (Powdthavee et al., 2015; Oreopoulos et al., 2011). Time and money invested in education pay returns and these returns have a positive net effect on the possibilities to satisfy human needs (Vila, 2000).

Economists and other researchers have also identified several benefits of education that go beyond the income benefit. For example, higher education is associated with positive aspects and experiences, self-respect (Clark et al., 2018), higher autonomy, and self-actualization (Albert and Davia, 2005; Einarson & Matier, 2005), route to career (Clark et al., 2018; Vila, 2000), and better marriage prospects (Wolf, 2000; Kaufmann et al., 2012)[10]. One of the purposes of education in a democratic society is to equip people for a flourishing life (White, 2007). In short, in addition to increasing income, education also has meaningful non-income returns that equip people for a flourishing life. Thus, all these benefits of education increase subjective well-being.

On the other hand, there may be various opposing forces of education that can have a detrimental effect on subjective well-being. For example, the opportunity cost of being educated, such as direct economic cost of education, forgone potential job opportunities, and loss of earning from time spent being educated, among others. Being overqualified or "over-schooled" for a job position might generate frustration and lower satisfaction. All of these factors can have a detrimental effect on well-being.

Thus, a priori is not obvious whether a higher level of education increase well-being. Specifically, it is not clear a priori whether the benefits of education outweigh the cost. However, the rapid expansion of schooling over the years, and the fact that more and more people voluntarily

[10] In a Chile sample, Kaufmann et al. (2012) found that women who are admitted to the elite university are more likely to get married to a smarter husband from better family background.

choose to get educated suggests that they expect a positive benefit from education[11]. Thus, I expect to find a positive relationship between education and well-being across countries. Therefore, my hypothesis is:

Hypothesis 1.1: The benefits of education on well-being are positive.

My next hypothesis investigates how the benefits of education vary across countries with different levels of development.

There are several reasons to expect that the benefits of education might differ between developed and developing countries. First, income benefit (returns) from education may vary between individuals across countries, because they differ in the efficiency with which they can exploit education to raise their productivity (Krafft, 2017; Brand et al., 2010). Conceptually, returns to investment in education in developing countries may be different from those of high-income economies for a variety of reasons, including smaller capital stocks and capital investment, limited technological capacity, weak labor market, more restricted schooling access (Psacharopoulis and Patrinos, 2004; Todaro, 1989), and lack of insurance markets to take risk and invest in education. Several studies such as Chard (2001), Montenegro and Patrinos (2013), and Duflo (2001) find higher returns to education in developing countries, while Peet et al. (2015) did not find a higher return to education in developing countries. The rapid expansion of formal education, as well as the low quality of education and the education-job mismatch, have been identified as problems driving low returns, especially in the developing countries (Assaad & Barsoum, 2009; World Bank, 2008).

Second, non-income benefits from education may differ across different sets of countries. For example, because of the low supply of educated people in the labor market, better-educated people in developing countries are more likely to be in higher demand for jobs and may get a better job position with higher wages and facilities. Furthermore, educated people in developing

[11] For example, in the 1950s, under 10% of the adult population, around the world, went into schooling, whereas, in 2010, it is more than 30% (Clark et al., 2018).

countries may have a significant advantage over other less educated peoples in terms of skills, know-how, productivity, training, and promotions (Harmon et al., 2003; Glewwe 2002), that motivates their efforts to succeed and "stand out" from the crowd and hence increase well-being. On the other hands, studies, mostly from advanced economies, find evidence college graduates being 'over-schooled', where higher educated people take jobs meant for lower educated people (for example, see Gilmore (2008), a study from Canada; Di Pietro et al. (2006), a study from Italy; Hout, 2006, a study from the U.S.). Alternatively, better-educated people are likely to have high job expectations, demand for a better work environment, and aspire for higher consumption and higher income. While all such factors can be easily available in developed countries, it may be difficult to fulfill in developing countries due to weak institutional environments, limited demand for skilled labor and dysfunctional labor union (Easterlin 2010; Temple (2001).

Thus, it is not clear ex-ante whether the effects of education on well-being will be higher in developed or developing countries. While the above arguments suggest that educated people in developing countries may have more advantages in the labor market and likely to earn a higher income. While there is no formal evidence on how the effects of education might differ in low-and high-income countries, it is safe to hypothesize that the benefits are likely to outweigh the cost of education in developing countries. Accordingly, my next hypothesis is:

Hypothesis 1.2: The income benefit of education is higher in developing countries than in developed countries.

My third hypothesis investigates the relationship between education and well-being across countries over time. The strength of the association between well-being and education could have decreased over time, for a number of reasons. First, the same level of education that once seemed satisfactory may likely result in frustration and hence, less well-being because of the increase in the supply of higher educated people over time. Globally, over the last three decades, the number of educated people entering the labor market has increased significantly (Clark et al., 2018; OECD, 2006). If the average education level rises, the relative advantage of better education declines. For example, the employment prospects of less-educated people have become more uncertain than used to be a few decades ago (Nunez et al., 2010). The increase in the supply of higher educated people is likely to pull down wage rates, increase competition in the job market, and push the less

educated out of the labor market. For example, greater competition in the labor market may force the higher educated people to take jobs meant for lower-level education. Higher educated people taking lower-level jobs entails lower wages and lower benefits, which is likely to pull down the wage rates and disrupt equilibrium in the labor market[12]. The problem of job-education mismatch or over-schooled has real economic consequences, such as disequilibrium in the labor market, lower motivation, lack of confidence, lower or negative labor productivity, less labor market participation and lower innovation (Patrinos et al., 2019; Pett et al., 2001). In essence, all of these factors, discussed above, can have a detrimental effect on subjective well-being over time.

Second, the rapid expansion of the education system is likely to influence the association between well-being and education over time. For example, over the years, the 'endpoint' of schooling has moved consistently upwards, from high school to undergraduate degrees and postgraduate (Harmon et al., 2003, Brand and Tie, 2010). In common parlance, nowadays, holding a university degree in developed countries like the United States, Europe, Canada, or Australia is no longer a sufficient condition for a high-level career (Albbert and Davia, 2005). Similarly, in developing countries, a high school degree is no longer a badge of distinction, and a university degree or beyond is becoming increasingly necessary. Such a transaction has resulted in the relative devaluation of education levels (Brand and Tie, 2010). Thus, the same level of education that once (a decade ago) seemed satisfactory might result in frustration[13].

Third, the decline in returns to education over the year may likely affect the relationship between education and well-being. Several studies find that the returns to education have declined substantially across countries over the years (Autor et al., 2003; Acemoglu and Autor, 2011). For example, Montenegro and Patrinos (2013) found that due to unprecedented expansion in educational attainment, the economic return to education over 30 years period has declined by 4.5 percent points, or 1 percent a year. Thus, lower returns to education may entail less well-being. These arguments lead to my next hypothesis:

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[12] For example, Di Pietro et al. (2006) found that in Italy, higher educated people take jobs meant for lower educated people at lower wage rates and lower benefits. In the Netherlands, Wolfer (2002) found similar evidence.

[13] For example, Nunez et al. (2010) found that in Europe, individuals with a lower level of education are more frustrated by their inabilities to achieve their desired level of success.

Hypothesis 1.3: The effects of education on well-being have diminished over time.

1.3 Data and Descriptive analysis

WVS data are available for the six successive waves (of five years' length) starting in 1980. For this study, I use data from the latest aggregated release of the four successive waves[14]: wave three (covering 1994-1998), wave four (covering1999-2004), wave five (covering 2005-2009) and wave six (covering 2010-2014). The WVS interviews nationally representative samples of adult residents with a targeted minimum sample size of 1,000 respondents per country. WVS is the largest cross-sectional, time-series survey conducted in almost 100 countries; it consists of 90 percent of the world's populations[15]. The WVS include individual-level data on life satisfaction of individuals, as well as on other characteristics, such as age, education, gender, marital status, household income, and other personal characteristics. Thus, in this study, my data are a pooled cross-section of 301,417 individuals living in 90 countries, between the years 1994 and 2014.

Life satisfaction is commonly referred to as overall contentment with life (Frey 2008); a person's thoughts about his or her life (Deaton 2010); feeling good and enjoying life and wanting the feeling to be maintained (Layard, 2005, 2011). Individuals' life satisfaction Index (LSI) is measured as an ordinal discreet variable, where the highest reported subjective well-being reflects the highest well-being of an individual. In the World Value Survey, life satisfaction is assessed by asking respondents the following questions: "*All things considered, how satisfied are you with your life as a whole these days*" with responses on a scale from 1, which means 'completely dissatisfied', to 10, meaning 'completely satisfied'.

To date, much of economic literature uses the measure of "life satisfaction," "well-being," and "happiness" interchangeably. These alternative measures are highly correlated and have similar coverages (Stevenson & Wolfers, 2008; Sandivk et al., 1993; Fordyce, 1993, Layard; 2005).

[14] The data for earlier two waves (1 and 2) is nationally not representative of the country's population at the time of the survey. In the earliest waves (1 and 2), the sample consists of a small number of countries, mostly wealthy nations and educated populations (Stevenson and Wolfers, 2008; Stevenson et al., 2013).
[15] www.worldvaluessurvey.org.

Various researchers and a large literature (Clark et al. 2018; Helliwell et al. 2019; Deaton 2013; Bennett et al., 2017; Nude et al., 2014; Howell and Howell, 2008; 2011, Frey, 2008) support the use of LSI as a measure of well-being. According to the World Happiness Report 2019, happiness, as measured by the LSI provides a broader indication of human welfare than do measures of income, since it captures the overall quality of life. Ample evidence points to a strong correlation between answers to subjective well-being and more objective measure of personal well-being, such as smiling (Di Tella and MacMulloch 2005), laughing, heart rate measures, sociability (Stevenson & Wolfers, 2008; Diener, 1984), asking friends, families and other relatives (Layard 2005). Following the previous literature, I use the terms life satisfaction, happiness, and well-being interchangeably.

Although WVS provides a large sample size and the inclusion of countries and individuals with different levels of income, there are three main limitations. First, the time gap between different waves is, on average, five years, and the set of overlapping countries in different waves is very limited. Table A.1 in the appendix A places the detailed list of countries and years included in each wave of the WVS. Second, since the data set in WVS is not a panel, there is no possibility for longitudinal analysis (Kruise et al., 2017). Third, because WVS data are made up of a series of cross-sections, no longitudinal results can be derived (Tella et al., 2003).

Table 1.1 reports the descriptive statistics for individual characteristics used in this analysis. Each row contains the average well-being for the control variables, as well as standard deviation, percent of the sample that falls into each category, and the number of observations. The average well-being is 6.6, with a standard deviation of 2.5. Of the total sample size, 52% are female, and they report well-being similar to males (6.6 and 6.5 points, respectively). My data have a balanced distribution of samples across different education levels: primary (39%), secondary (37%), and university (24%). Interestingly, there appears to be a positive relationship between different levels of education and average well-being: individuals with higher education are monotonically happier. Specifically, university graduates report higher well-being (7.1 points) as compared to an individual with secondary education (6.6 points), which in turn is higher than those with primary (6.4 points). The average well-being of employed and self-employed are 6.7 and 6.5 points, respectively, which is slightly higher than the unemployed individuals (around 5.9 points). The

"other" category represents students, retired, and housewives. On average, married people, which comprise more than half of my sample (64%), report the same levels of well-being as a single individual (25% of the sample size), which is 6.6 points.

Table 1.1. Descriptive statistics of all the control variables, 1994-2014

Variables	Mean	Sd.	Percent	N
Well-being	6.6	2.5	100%	301,417
Gender				
Female	6.6	2.5	52%	158,675
Male	6.5	2.4	48%	147,438
Education				
Primary	6.4	2.6	39%	111,905
Secondary	6.6	2.4	37%	104,739
University	7.1	2.2	24%	68,526
Employment Status				
Employed	6.7	2.3	42%	124,792
Self-employed	6.5	2.4	12%	34,059
unemployed	5.9	2.7	10%	28,905
Others[a]	6.6	2.5	36%	109,842
Marital-Status				
Married	6.6	2.4	64%	193,083
Single	6.6	2.4	25%	75,306
Others[b]	6.1	2.6	11%	34,232
No. of Children				
No Child	6.6	2.4	29%	85,058
One	6.5	2.4	16%	46,279
Two	6.5	2.4	25%	73,713
3 or more	6.5	2.6	30%	89,792
Health Status				
Good	7.0	2.3	66%	197657
Poor	5.6	2.2	34%	99657
Income Level				
Low	5.9	2.7	34%	95,752
Middle	6.7	2.3	44%	122,888
High	7.4	2.1	22%	61,481

Table 1.1(Panel B): Descriptive statistics of education levels across three sets of countries

	High-income				Middle-income				Low-income			
	Mean	sd.	%	N	Mean	sd.	%	N	Mean	sd.	%	N
All	7.3	1.9	29%	86999	6.8	2.5	35%	105861	5.8	2.6	36%	108324
Primary	7.1	2.1	33%	28297	6.7	2.6	44%	44465	5.7	2.6	40%	39060
Secondary	7.3	2.1	37%	31283	6.8	2.4	35%	35719	5.8	2.6	38%	37629
University	7.6	1.7	30%	25920	7.1	2.2	21%	20883	6.3	2.5	22%	21678

Notes: In both the panels of Table 1.1: *Mean* represents the average of the well-being score in each category and each set of countries. *Sd.* is the standard deviation; *Percent (%)* is percentage of people in each category. *N* represents the number of observations in each category. [a] Other employment category includes retired, housewife, students and other. [b] Other Marital status category includes separated, widowed and divorced.
Panel B: Sample is split into three subsamples based on the country's level of development: low-medium-and high-level, based on the World Bank classification.

The average well-being of an individual with no child is 6.6 points, which is slightly higher than those with one or more children (6.5 points). Almost half of my sample size (44%) contains individuals whose household income falls in the middle-income category, and 34% of my sample consists of low-income households. On average, individuals with better health are happier (7.0 points) than those with poor health (5.6 points). I observe a monotonic relationship between household income and average well-being. Individuals from high-income households have the highest well-being (7.4 points), which decreases to 6.7 points for those with middle household income, and 5.9 points for those with low household income.

In panel B of Table 1.1, I briefly describe my sample composition and well-being for each education category by development levels. In my sample, 29% of individuals are from high-income countries, 35% from middle-income countries, and 36% from low-income countries. My data demonstrates the expected distribution of subsample by education levels across all three sets of countries. Specifically, around 33%, 44%, and 40% of my sample from high-middle-and low-income countries, respectively, consist of individuals with elementary education. Similarly, 30%, 21%, and 22% of the sample size from high, middle, and low-income countries, respectively, have a university degree. As expected, my data contains a large sample size of elementary and secondary, and the smaller sample size of university graduates in low-income countries as compared to high-income countries. My data distribution reflects the idea that in developing countries, a smaller section of the population has higher education.

I observe a monotonic relationship between well-being and economic development stages. On average, individuals from higher income-countries have the highest well-being (7.3 points), which decreases to 6.8 points for those from middle-income countries and further decreases to 5.8 points for those from low-income countries. I also observe a monotonic relationship between well-being and education levels across all groups of countries. Specifically, university graduates from high-income countries have the highest well-being (7.6 points), which is higher than the university graduates from middle-income countries (7.1points), which in turn is higher than those from the low-income countries (6.3 points). Such a monotonic relationship between education levels and well-being is consistent at the other two levels of education (primary and secondary) across all three sets of countries. These statistics suggest that, on average, better-educated people are happier

in all three groups of countries, and their well-being increases with an increase in economic development. These results are consistent with the results postulated by previous literature: more economically developed countries tend to exhibit higher mean levels of well-being (Diener et al., 2013; Levin et al., 2011).

However, individual characteristics are likely to be correlated, so these simple comparisons should not be emphasized. For example, education is likely to be correlated with income, employment status, gender, and marital status (Di Tella, 2003). Thus, the results from the descriptive analysis are insufficient to establish the relationship because it ignores "partial effects": that is an effect on one variable while keeping other variables constant. Below, I explore multivariate regression analysis, using a standard well-being function, which can identify the relative contribution of each of the individual characteristics while controlling for other variables. The multivariate model allows me to analyze separately each factor that is correlated with reported subjective well-being.

1.4 Empirical Methodology

I use a standard well-being function to estimate my results, where individuals' reported satisfaction is regressed on various personal characteristics (e.g., Tella et al., 2003; Castriota, 2006). The main dependent variable is the self-reported life satisfaction level with values from 1 (dissatisfied) to 10 (satisfied)[16]. I regress the life satisfaction answers on a set of personal characteristics.

I include a set of personal characteristics commonly included in well-being regression as control variables. These variables include age, sex, education, employment status, health status, income level[17], and marital status.[18] Thus, I expect to find a predictable result for all my control variables, as seen in earlier literature. For example, I expect that better-educated people are likely to have higher well-being (as discussed above). I assume that most people value being part of a

[16] I assume that across individuals, the scale of life satisfaction has the same meaning for all the people in the sample, as the underlying intervals are of equal length. These assumptions are not unreasonable (refer Frey, 2008; Clark et al., 2018, Hartog, & Oosterbeek, 1998 for a detailed discussion)

[17] Note that the WVS data does not contain the person's income, only the decile of the income distribution: i.e., only the relative income status is available (Salinas-Jimenez et al., 2012)

[18] These variables have been commonly used in the previous literature as potential determinants of social well-being. For example, Helliwell et al. (2019); Deaton (2010); Powdthavee (2015); Di Tella et al. (1997, 2005); Selim (2008).

cohesive and robust family. Thus, I expect being married, and having children will increase happiness. One of the most ubiquitous findings in happiness research is that unemployed people tend to be much less happy than employed people (Frey, 2008; Clark and Oswald, 1994). Consistent with the previous findings, I predict that those unemployed are less likely to be happy than employed. Most of the research has demonstrated that women are happier than men (Frey, 2008; Di Tella et al., 2001, 2003; Powdthavee et al., 2015; Deaton et al., 2010). Thus, I expect to see similar results in my data. The description and sources for the dependent and independent variables are included in Table A.2 in the appendix A. My empirical model is as follows:

$$WB_{ijt} = \alpha + \beta X_{ijt} + \lambda_{jt} + \varepsilon_{ijt} \qquad (1.1)$$

Where WB is well-being reported by the individual i in country j at time t, X is a vector of individual characteristics such as age, education, marital status, employment status, health status, household income, and gender; β are the parameters to be estimated that tell us how important different explanatory factors are in explaining the overall variation in well-being, ε is an idiosyncratic error term. I also include country-year fixed effect λ_{jt}. The country-year fixed effect captures all common factors that could affect average well-being and control variables in the same country in a year of the survey. The error term is clustered at the country-year level to allow for any unspecified correlation between individual-level observations in each country-year combination. I run the model 1.1 on the full sample and also split my sample into three subsamples based on the country's economic development levels: low-middle and high-income based on the World Bank classification.

1.4.1 Causality

Before discussing my results, it is important to note that my study does not aim to establish the causality of the relationship between education levels and well-being. My primary aim is to document the correlation in the data. In other words, except for age and gender (which cannot be influenced by an individual choice), all the coefficients in my results can only assert correlation rather than causality. For example, the positive coefficient between education and happiness does not imply the direction of causality, but rather an association between well-being and education. It is reasonable to believe that the same factors (at least those factors that people can influence,

such as relationship status, employment status, education, and income), maybe the determinants or consequences of happiness. For instance, higher education may lead to higher well-being (*direct causality*), but conversely, causality may go from well-being to education (*reverse causality*). For example, happy people may choose to get more education, are likely to get married, be more productive at work, and earn a higher income. Similarly, happier people may work hard and thus produce more output and earn more income (Di Tella, 2003). On the other side, well-educated individuals may be more likely to find employment, gain higher skills and knowledge and be more productive, earn a higher income, get married, and maintain a decent living standard, thus remain happier. If well-educated people appear to be the most satisfied, that may either imply that education breeds happiness, or that happier people do better in school (Veenhoven, 1996). Thus, the direction of causality could run from either direction; that is, there can be direct or indirect causality. While establishing and identifying such causality is essential, it is beyond the scope of this paper because I lack adequate data to identify it credibly.

However, I believe that despite these limitations, I can adequately answer another equally important questions: 1) what is the relationship between education levels and well-being across countries; 2) whether income and non-income benefits of education differ across countries with different levels of economic development: 3) how the relationship between education and well-being changed over time. My focus in this paper is on the relative difference in well-being between different levels of education and how these differences vary across countries. Note that given the data set, the scope of this paper, data limitation, and the lack of information, I only explore the relationship between education levels and well-being and the magnitude of this relationship. However, I do not attempt to uncover the mechanism: i.e., why education predicts well-being. This question remains a potentially important topic for further research.

1.5 Results

Table 1.2 reports the regression results for my empirical model 1.1[19]. Note that all of the individual

[19] Results reported are from OLS regressions; I also ran ordered logistic regressions. The results from ordered logistic regression lead to the same substantive conclusions. Results are not reported.

control variables (except age) are coded as categories, and one of the categories is omitted to serve as a base group. Thus, the result should be interpreted as the difference of the reported category from the base (i.e., omitted category). For example, I coded the education variable into three categories: primary, secondary, and university. I use primary education as the omitted category. Therefore, the result shows how well-being measures of two reported categories (secondary and university education) are different from the omitted category (primary education).

Results reported in Table 1.2 test the relationship between education and well-being around the world. Table 1.2, columns 1- 6 reports coefficient estimate of subjective well-being on various personal characteristics (i.e., I add sequentially more variable to the model 1.1). First, I briefly describe the results for my other control variables, then focus on the variable of my main interest, which is education. Since column 6 includes a complete set of individual characteristics commonly use in the study well-being, I focus my discussion on these results.

The results in column 6 are particularly compelling. Consistent with the results found in the previous literature, my results indicate the predicted pattern for all my control variables. For example, age has a non-linear U-shaped relationship with well-being. Women are generally happier than men. Individuals with one child are slightly less happy, while those with two, three or more children are not significantly different in well-being from those with no children (the omitted category). Employed have slightly lower well-being than housewife, students, and retired (omitted category), while unemployed have significantly lower well-being (the magnitude is substantial, almost half a point difference in well-being). Among different relationship status, married people are the happiest, followed by the single as compared to those divorced or separated (omitted variables). The magnitude is substantial, equal to 0.5 and 0.2 points for marriage and single, respectively. Healthy individuals are happier than those with the poor health condition. The magnitude of the well-being gap between individuals with good and poor health is 1.06 points, which is substantial. Similarly, income dummies are highly significant, and the magnitude is economically large. Individuals with high household income associated with 1.2 points higher well-being than those in low household income (omitted category). Having a middle household income have, on average, about 0.7 higher well-being than those with low household income. The results on all control variables are generally consistent with prior literature (e.g., Benchflower and

Oswald, 2008; Plouffe et al., 2017; Peiro, 2006; Tella et al., 2003; Easterlin, 2013, among others).

Table 1.2: Relationship between education and well-being across countries, 1994-2014

	(1)	(2)	(3)	(4)	(5)	(6)
Age	-0.030***	-0.043***	-0.045***	-0.057***	-0.048***	-0.048***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Age2	0.0003***	0.0004***	0.0004***	0.0006***	0.0005***	0.0005***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Female	0.076***	0.062***	0.063***	0.111***	0.142***	0.139***
	(0.018)	(0.018)	(0.017)	(0.017)	(0.016)	(0.015)
Education						
Secondary	0.258***	0.279***	0.264***	0.255***	0.192***	0.072***
	(0.028)	(0.028)	(0.027)	(0.027)	(0.025)	(0.020)
University	0.512***	0.550***	0.508***	0.500***	0.388***	0.142***
	(0.033)	(0.033)	(0.032)	(0.031)	(0.030)	(0.025)
No. of children						
One		0.105***	0.078***	-0.093***	-0.080***	-0.047**
		(0.021)	(0.021)	(0.023)	(0.021)	(0.021)
Two		0.187***	0.154***	-0.049*	-0.043*	-0.024
		(0.023)	(0.022)	(0.025)	(0.024)	(0.024)
3 or more		0.226***	0.193***	-0.014	-0.003	0.036
		(0.028)	(0.027)	(0.030)	(0.027)	(0.026)
Employment Status						
Employed			0.032	0.041**	-0.015	-0.066***
			(0.020)	(0.020)	(0.019)	(0.019)
Self-employed			0.007	0.011	-0.041	-0.079***
			(0.031)	(0.031)	(0.030)	(0.029)
Unemployed			-0.596***	-0.552***	-0.538***	-0.441***
			(0.041)	(0.039)	(0.038)	(0.033)
Marital status						
Married				0.647***	0.576***	0.461***
				(0.025)	(0.024)	(0.025)
Single				0.286***	0.243***	0.173***
				(0.03)	(0.03)	(0.03)
Health Status						
good					1.062***	0.978***
					(0.026)	(0.025)
Income level						
Middle						0.582***
						(0.039)
High						1.107***
						(0.056)
Constant	7.028***	7.168***	7.308***	7.125***	6.193***	5.918***
	(0.069)	(0.076)	(0.075)	(0.072)	(0.063)	(0.068)
N	280182	269444	261657	261257	256946	235837
R-squared	0.193	0.190	0.195	0.201	0.237	0.261

Notes: All regressions include country-year fixed effects. P-value reported in parentheses. Standard errors are clustered by year and country. N is the number of observations. *** Significant at 1 percent level. ** Significant at 5 percent level. * Significant at 10 percent level.

My main focus of attention is on the education variable: categorical variables to denote whether an individual has primary (omitted category), secondary or university level of education[20]. As shown in column 1, education is well correlated with well-being, provided no other variables are included[21]. Note that the estimated coefficient for education in column 1 of Table 1.2 represents the total effects of education on well-being: i.e., direct plus the indirect effects of education on well-being. However, it is likely that this result overestimates the direct effects of education on well-being because it doesn't control for other observable variables that education affects, and that then affect well-being. In other words, some of those points of education on well-being may include indirect effects via other observable variables[22]. Empirically, we can capture the direct effect of education on well-being by holding other observable variables constant [23]. In this paper, I use five main observable variables that education affects, and that then affect well-being. These variables include household income, employment status, health status, marital status, and the number of children[24]. Thus, in column 6 of Table 1.2, I controlled for other individual characteristics commonly used in the well-being study. Thus, the coefficient of education in column 6 is considered as a direct benefit of education on well-being. I use the regression in column 6 as the main model for my subsequent analysis.

The estimated coefficient for education levels in column 6 indicates a positive correlation between education and well-being, *ceteris paribus*. Those with secondary and university education have well-being higher by 0.07 and 0.14 points, respectively, as compared to primary education. My results show that education has a monotonically positive relationship with well-being (i.e., well-being increases with higher education levels achieved).

[20]Education in the study is operationalized as the formal schooling, accumulating knowledge, skills, values, and behaviors learned at school, under the three education categories: Primary, Secondary and University.

[21] Although age and gender are included in the regression, these variables don't have any association between education and well-being: i.e., I assume that, in theory, age and gender cannot be influenced by education levels.

[22] Conceptually, the indirect effect also includes other unobservable benefits of education on well-being such as self-respect, social-status (Einarson & Matier, 2005), freedom, confidence, and flourishing life (Clark et al., 2018). Empirically, these benefits are difficult to quantify.

[23] In theory, the direct benefit of education includes knowledge and skills. Since these benefits of education are hard to measure, I obtain the direct benefit of education by controlling observable variables that are available in my dataset.

[24] While the list of observable variables included in this study is by no means exhaustive, it has been determined by the data available in the WVS.

Although the magnitude of the education variable in column 6 is statistically significant, the economic significance is relatively small. One reassurance, however, is that holding constant a range of other important factors like income levels, marital status, health status, employment status, and the number of children, the association between education and well-being remains statistically significant (at the 1% significance level). This evidence shows that globally, the correlation between education levels and well-being is positive, ceteris paribus.

From the above analysis, it is clear that education is well correlated with well-being, *ceteris paribus*. However, the results indicate that well-being is moderately affected by education. In other words, the magnitude of the education variables is rather small compared to other personal characteristics, such as income level and health status. However, an important observation to note is that the well-being points for education dummies (0.07 and 0.46 points for secondary and university education in column 6 of Table 1.2) indicate the direct association between education and well-being. As discussed above, on top of the direct relationship, there are indirect effects of education on well-being via other variables, such as income level, employment, health status, and marital status.[25] If education affects well-being through other variables, then its direct effect on well-being should change with inclusion or exclusion of some of these variables in my model 1.1. Thus, it is interesting to see the magnitude of the indirect effects of education on well-being via these variables. To estimate the indirect effect of education on well-being, I run the regression without other observable variables, one at a time, and compare the result with my model in column 6 of Table 1.2[26]. My method of estimating the indirect effect of education on well-being is similar to the standard approach used by most researchers to analyze "mediation." Mediation is a hypothesized causal chain in which one variable affects a second variable that, in turn, affects a third variable, as proposed by Baron and Kenny (1986). The detail discussion of the econometric approach and the model used to estimate the indirect effect of education is reported in Appendix A.3.

[25] There is a broad consensus that income, health, and other social-economic status are positively linked to schooling (Clark et al., 2018, Powdthavee, 2015; Diner et al., 1993, Sandvik et al. 1993). See Clark et al. (2018), for a similar discussion.

[26] Clark et al. (2018) use a similar specification to study the effect of education on life satisfaction using the British Cohort Study data.

Table 1.3: The direct and indirect effect of education on well-being across countries, 1994-2014

	(1)	(2)	(3)	(4)	(5)	(6)
Age	-0.048***	-0.047***	-0.052***	-0.039***	-0.057***	-0.048***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Age2	0.0005***	0.0005***	0.0006***	0.0004***	0.0006***	0.0005***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Female	0.139***	0.138***	0.160***	0.106***	0.111***	0.142***
	(0.015)	(0.015)	(0.016)	(0.015)	(0.015)	(0.016)
Education						
Secondary	0.072***	0.063***	0.073***	0.072***	0.115***	0.192***
	(0.020)	(0.020)	(0.020)	(0.021)	(0.021)	(0.025)
University	0.142***	0.128***	0.153***	0.137***	0.216***	0.388***
	(0.025)	(0.026)	(0.025)	(0.025)	(0.025)	(0.030)
No. of children						
One	-0.047**		-0.046**	0.093***	-0.052**	-0.080***
	(0.021)		(0.021)	(0.019)	(0.023)	(0.021)
Two	-0.024		-0.018	0.139***	-0.026	-0.043*
	(0.024)		(0.024)	(0.020)	(0.025)	(0.024)
3 or more	0.036		0.044*	0.204***	0.034	-0.003
	(0.026)		(0.026)	(0.024)	(0.028)	(0.027)
Employment Status						
Employed	-0.066***	-0.068***		-0.075***	-0.020	-0.015
	(0.019)	(0.018)		(0.019)	(0.019)	(0.019)
Self-employed	-0.079***	-0.083***		-0.084***	-0.037	-0.041
	(0.029)	(0.028)		(0.028)	(0.029)	(0.030)
Unemployed	-0.441***	-0.444***		-0.470***	-0.441***	-0.538***
	(0.033)	(0.032)		(0.034)	(0.034)	(0.038)
Marital status						
Married	0.461***	0.463***	0.475***		0.513***	0.576***
	(0.025)	(0.025)	(0.025)		(0.026)	(0.024)
Single	0.173***	0.181***	0.159***		0.204***	0.243***
	(0.031)	(0.026)	(0.031)		(0.032)	(0.031)
Health Status						
Good	0.978***	0.977***	0.982***	0.990***		1.062***
	(0.025)	(0.025)	(0.025)	(0.025)		(0.026)
Income level						
Middle	0.582***	0.576***	0.602***	0.609***	0.653***	
	(0.039)	(0.038)	(0.039)	(0.039)	(0.040)	
High	1.108***	1.099***	1.135***	1.147***	1.221***	
	(0.056)	(0.055)	(0.056)	(0.055)	(0.058)	
Constant	5.918***	5.919***	5.839***	5.991***	6.747***	6.193***
	(0.068)	(0.065)	(0.065)	(0.067)	(0.075)	(0.063)
N	235837	241855	243097	236155	239543	256946
R-squared	0.261	0.262	0.259	0.257	0.231	0.237

Notes: All regressions include country-year fixed effects. P-value in parentheses. Standard errors are clustered by year and country. N is the number of observations. *** Significant at 1 percent level. ** Significant at 5 percent level. * Significant at 10 percent level.

Table 1.3 reports the direct and indirect effect of education on well-being. In column 1, I reproduce the results reported in column 6 of Table 1.2. The subsequent columns 2 - 6 report the results without the number of children, without employment dummies, without marital status, without health status, and without household income, respectively. Thus, the differences in the coefficient for education variable between column 1 and other columns 2 - 6 tell us the indirect effect of education on well-being via each control variable (i.e., the number of children, employment status, marital status, health status, and income level), ceteris paribus. Consistent with my earlier discussion, I refer to the difference in the coefficient for education between column 1 and columns 2 - 5 as the non-income benefits and difference in the coefficient for education between column 1 and column 5 as the income benefit of education.

The coefficients for education in columns 2, 3, and 4 are not statistically different from the coefficient for education in column 1 of Table 1.3[27]. The results indicate that there is no or very little influence of education on well-being via employment, numbers of children, and marital status. However, when the health dummies are excluded from the regression, the magnitude of the secondary and university education increases by 0.04 and 0.07 points, respectively[28]. The results indicate that education has considerable influence on well-being through health. Interestingly, when income categories are removed from the regression, the coefficient for education levels increases substantially. The magnitude of the secondary education increases to 0.19 points and university education increases to 0.39 points. Specifically, respondents' well-being between secondary and primary education, and between the university and primary education increases by 4.8% and 9.8%, respectively, of one standard deviation on the well-being measures[29]. The magnitude of the differences in education dummy between column 1 and column 6 are statistically significant (according to the t-test, results reported in Table A.5, panel B). The results imply that education has strong correlation with household income.

In summary, the results suggest that education influences well-being through other channels, income, and health being the main one. However, the magnitude of income benefit is

[27] The results for the statistical test are reported in Table A.5, panel B.
[28] The difference in coefficients of education levels between column 5 and column 1 of Table 1.3.
[29] Difference in the coefficient for each education level between column 6 and column 1 of Table 1.3 divided by the standard deviation of well-being (from Table 1.1); i.e., (0.192-0.0.072)/2.5) *100 = 4.8%; (0.388 - 0.142)/2.5) *100=9.8%).

larger. In other words, education in itself has a small and positive direct effect on well-being (column 1), but a bigger indirect effect via higher income (column 6)[30].

My result is consistent with a study by Clark et al. (2018), who used British Cohort Study data and found a larger influence of education on well-being via income. My findings also reflect the idea that the effects of household income are almost invariably both statistically significant and quantitatively important for well-being (Deaton 2010; Di Tella et al., 2003; Vila, 2000). More importantly, the fact that the education dummy continues being significant even after holding constant a range of other individual characteristics (column 1 of Table 1.3) suggests that there are impacts of education on subjective well-being that go beyond just the income, health and other non-income benefits. These results, I believe, clearly supports my hypothesis 1.1.

In Table 1.4, I reproduce the results from the regression reported in column 6 of Table 1.2 (column 1 of Table 1.3) with subsample splits into high, middle, and low-income countries. I use the results in Table 1.4 to discuss two important points: first, whether the positive relationship between education and well-being holds at different levels of economic development; second, whether benefits (total, direct, and indirect) of education differ between developed and developing countries. Specifically, results in Table 1.4 test my hypothesis 1.2.

The results in Table 1.4 show a positive relationship between well-being and education in all three groups of countries (columns 1,4, and 7). Specifically, the magnitude of university education is higher than the magnitude of secondary education in all three sets of countries. In other words, the well-being gap between secondary and primary education in the low, middle, and high-income countries is 4.4%, 2.2%, and 0.88%, respectively, of one standard deviation on the well-being measures. Similarly, the well-being gap between university and primary education in

[30]Note that the WVS data does not contain the person's income, only the decile of the income distribution. More specifically, the survey asks the respondent to indicate their household income on the number scale of 1 to 10, where 1 indicates the lowest and 10 the highest income group. People may not know where they fall in the income distribution. Thus, it is likely that income can be measured with errors, and the income measurement error can be correlated with education. For example, higher-educated people may be able to predict their income more precisely than less-educated people. Thus, lower educated people might have more noise in the income measurement error than higher-educated people. However, it is difficult to specify (because of inadequate theoretical conceptualization regarding the specific sources of error) how will such measurement error is related to the well-being measure in my regression specification. Thus, I assume that such a measurement error is unlikely to affect the well-being measure in my results.

the low, middle-and high-income countries is 9.0%, 4.1%, and 3.4% of one standard deviation, respectively[31]. The difference in coefficients between different levels of education within each set of countries is statistically significant; p-values equal to zero according to the t-test, results reported in Table A.5, panel C.

Table 1.4. Relationship between education and well-being across countries with different level of development, 1994-2014

	Low-income			Middle-income			High-Income		
	(1) LI	(2) LI	(3) LI	(4) MI	(5) MI	(6) MI	(7) HI	(8) HI	(9) HI
Secondary	0.11***	0.13***	0.24***	0.06*	0.11***	0.20***	0.02*	0.06**	0.09***
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.06)	(0.03)	(0.03)	(0.02)
University	0.22***	0.28***	0.51***	0.10*	0.17***	0.37***	0.09***	0.18***	0.26***
	(0.04)	(0.04)	(0.04)	(0.03)	(0.05)	(0.06)	(0.05)	(0.03)	(0.03)
Health	Y	N	Y	Y	N	Y	Y	N	Y
Income	Y	Y	N	Y	Y	N	Y	Y	N
Other control	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	83776	83994	91062	82926	84203	89206	68932	71143	76458
R-squared	0.22	0.19	0.19	0.24	0.21	0.22	0.18	0.13	0.16

Notes: All regressions include country-year fixed effects. *p*-value in parentheses. Standard errors are clustered by year and country. *** Significant at 1 percent level. ** Significant at 5 percent level. * Significant at 10 percent level. HI is High-income countries; MI is Middle-income countries; LI is low-income countries. N is the number of observations.

Another interesting observation is that the magnitude of secondary education on well-being is five times higher in low-income countries than in high-income countries. The magnitude of university education is more than double in low-income countries as compared to high-income countries. The difference in coefficients for education between low-and high-income countries is statistically significant (t-test result not reported). The results indicate that the difference in well-being between university vs. primary; and secondary vs. primary educated people is larger in developing countries[32].

[31] Coefficient for secondary education in columns 1,4 and 7 of Table 1.3 divided by standard deviation of well-being (from the Table 1); i.e., (0.11/2.5) *100 = 4.4%; (0.055/2.5) *100= 2.2%; (0.020)/2.5) *100 =0.88%. Coefficient for university education in columns 1,4 and 7 of Table 1.3 divided by standard deviation of well-being (from the Table 1); i.e., (0.224/2.5) * 100 = 9.0%; (0.104/2.5) *100 =4.1%; (0.085/2.5) * 100 =3.4%.

[32] However, these results can be driven by two possible factors: First, WVS may oversample educated people, especially in low-income countries, because they can easily understand the survey questions. Second, it is also likely that the distribution of the education categories in my sample may not represent the actual or accurate distribution from the entire population. Therefore, the results can be biased. Appendix A.4 and Table A.4.1 in Appendix A provides details discussion on these issues, which reassure that my results are not affected by these factors.

There can be many reasons for the difference in well-being among educated people in developed and developing countries. For example, income benefits and non-income benefits of education on well-being might differ between different sets of countries. Note that the result in columns 1, 4, and 7 of Table 1.4 reflect the direct effect of education on well-being. As discussed above, to obtain the total effect of education on well-being, we need to identify the indirect effects of education: i.e., income-benefit and non-income benefits of education. Below, I provide a detailed discussion on this.

In columns 2, 5, and 8 of Table 1.4, I report the results without controlling for health status. Although the education coefficients increase by some points, the difference in magnitude is small in magnitude[33]. The results imply that there is some influence of education on well-being via health across different sets of countries. However, the results are statistically weak[34]. I repeated this exercise by dropping each of the other control variables, such as employment, the number of children, and marital status, at a time. The results are similar to the results reported in columns 1,4 and 7 of table 1.4. These analysis results indicate that there is no evidence of the influence of education on well-being via marital status, the number of children, and employment status in all three sets of countries. For brevity, the results are not reported.

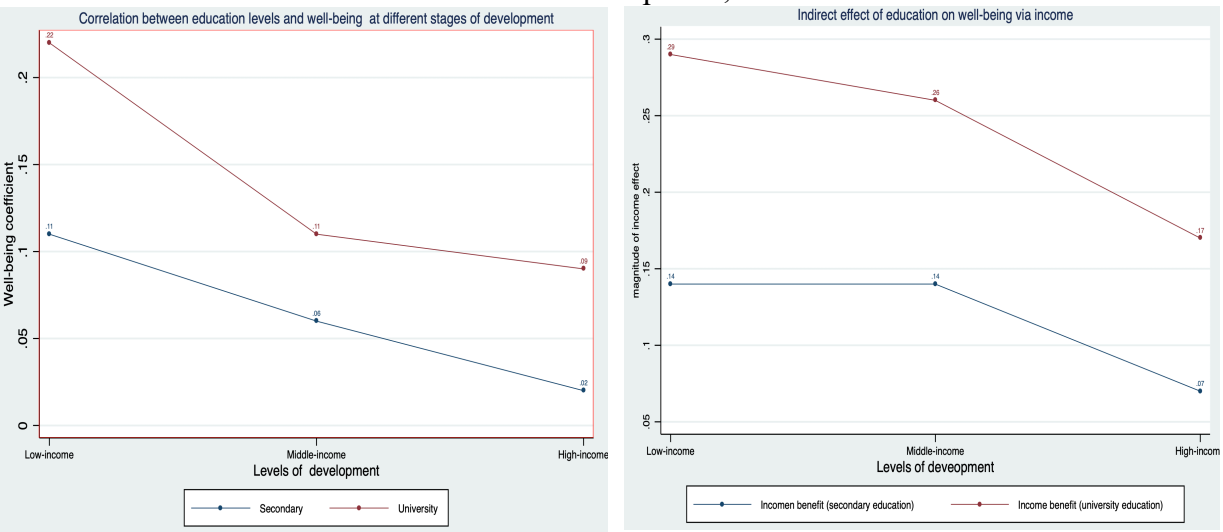
In columns 3, 6, and 9 of Table 1.4, I report the results without controlling for household income. Interestingly, the estimated coefficient for university education increase by three times in high-and middle-income countries and two times in low-income countries. The magnitude of secondary education increases by more than two times in low-income countries, and three times in middle-and high-income countries. The increase in magnitude implies that in all three sets of countries, income benefit captures a large portion of the indirect influences of education on well-being. That is, for university education, the income benefit is about 0.28 points, 0.26 points, and 0.18 points in low-middle-and high-income countries, respectively[35]. Similarly, for secondary education, the income benefit is about 0.14 points, 0.13 points, and 0.07 points in low-middle-and high-income countries, respectively. These results indicate that the income benefit of education is

[33]However, the magnitude of the influence of education on well-being via health is bigger in high-income countries than in middle-and low-income countries.
[34] Statistical test not reported.
[35] The difference in the coefficient for university education in columns 3 and 1(for Higher-income countries); columns 6 and 4 (for middle-income countries), and columns 9 and 7 in low-income countries.

higher in low- and middle-income than in high-income countries. In summary, the results in table 1.4 reflect the fact that both the direct and income benefit of education are higher in developing countries than in developed countries.

To represent this result visually, I plot the estimated coefficient of education for the three samples in Figure 1.1 below. The vertical axis shows the well-being levels, while the horizon axis shows the point for the three groups of countries: low-middle-and high-income.

Figure 1.1: The direct and indirect effect of education on well-being across three groups of countries with different levels of economic development, 1994-2014



Notes: The vertical axis in Figure 1.1 shows the well-being levels (left panel) and income-benefit (right panel), while the horizon axis shows the point for the three groups of countries: low-middle-and high-income.

The left panel in Figure 1.1 represents the coefficient as given in columns 1,4 and 7 of Table 1.4. The red and blue lines connect the coefficient of university and secondary, respectively, on well-being. Figure 1.1 (left panel) shows a noticeable pattern: those with university education are happier than those with secondary education in all sets of countries (i.e., the red line is above the blue line in all three groups of countries). The fact that both the lines are above zero shows that the more educated people are happier than primary educated in all sets of countries. However, results are larger in magnitude in low-income countries.

The red and blue lines in the right panel of Figure 1.1 shows the income effect of university and secondary education, respectively, on well-being. As shown in figure 1 (right panel), the income benefit of university education is higher than secondary education on all three sets of

countries. Furthermore, it is clear from the graph that the income benefit is higher in developing countries than in developed countries, as discussed above.

The results in Table 1.4 and Figure 1.1 provide aggregate estimates between sets of countries. As a robustness check, I explore whether my results, as seen in Table 1.4, hold within each country. To investigate this, I re-run my regression in column 6 of Table 1.2 separately for 90 countries and report the results in Figure 1.2, below.

In Figure 1.2 (both graphs), the vertical axis shows the well-being levels, while the horizon axis shows the log of GDP per capita. The vertical straight lines divide the countries into low, middle, and high-income as per log of GDP. Countries to the left of log GDP 7.7 are low income, to the right of log GDP 9.4 are high-income and countries in between the two vertical straight lines are middle-income countries[36].

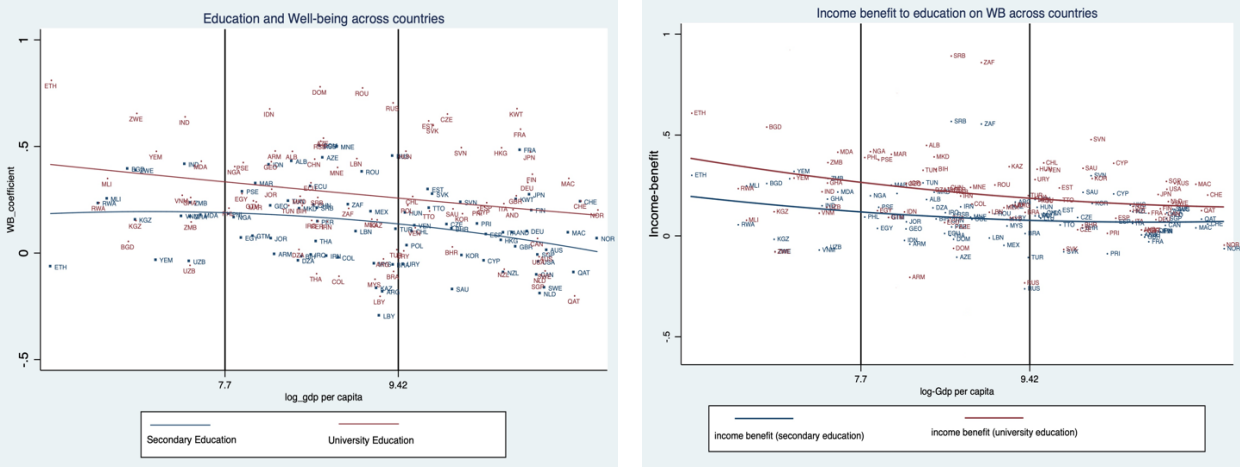
The left panel represents the scatter plot of the education coefficients for each country. Each country has two data points, and each point depicts the relative coefficient for secondary and university as compared to primary education [37]. The red and blue lines represent the predicted (average) effect of university and secondary education, respectively, on well-being.

The left panel shows a positive correlation between education levels and well-being globally. As it shows, the red line is above the blue line across all countries, suggesting that the university-educated are happier than secondary educated around the world. The downward slope of the lines reflects the fact that the well-being of university and secondary educated, as compared to primary educated, is higher in developing countries than in developed countries. This result reinforces the result observed in Table 1.4 with samples split into sets of countries. Thus, the figure provides clear evidence that education and well-being have a positive correlation around the globe.

[36]The World Bank specification is used to draw the vertical line at logGDP 7.7 and logGDP 9.4 that divides the countries into the low-middle-and high-income groups.

[37] The coefficient points are extracted from the regression result of each country. For brevity, the regression results for each country are not reported.

Figure 1.2: The direct and indirect (income) benefit of education and well-being across countries, 1994-2014



Note: The vertical axis in Figure 1.2 shows the well-being levels (left panel) and income-benefit (right panel), while the horizon axis shows the log of GDP per capita. The vertical straight lines divide the countries into low, middle, and high-income as per log of GDP. Countries to the left of log GDP 7.7 are low income, to the right of log GDP 9.4 are high-income and countries in between the two vertical straight lines are middle-income countries.

The right panel in Figure 1.2 represents the scatter plot of income benefit. Each country has two data points, and each point depicts the income benefit to university and secondary education as compared to primary education. The red and blue lines represent the predicted (average) values of income benefit to university and secondary education, respectively. The figure (right panel) shows that income benefit to university education is larger than income benefit to secondary education across countries (i.e., the red line is above blue line across the figure). Another interesting observation is that the lines decline with an increase in log GDP, demonstrating that the income benefit to education on well-being is higher in developing countries. Note that the gap between the two lines narrows down with an increase in log GDP. The graph explains that there is a bigger difference between income benefit to university vs. primary education, and secondary vs. primary education in developing countries than in developed countries. These results provide reassurance that the results observed in Table 1.4 hold within each country across the globe.

Next, I split my sample by gender to see whether the relationship between education and well-being differs between females and males across countries. The results are reported in Table 1.5. On average, both females and males with university education are happier than those with secondary education. Although the relative well-being of females with secondary and university education are higher than males, the well-being gap is very small. This pattern is similar across all

sets of countries. However, the magnitude of the direct effect of education on well-being is bigger in low-income countries for both females and males, and the results are statistically significant (statistics t-test not reported). More specifically, university and secondary educated females and males are happier in low-income countries than in middle-and-high income countries[38].

Table 1.5: Relationship between education and well-being across countries by gender, 1994-2014

	All Sample		Low-income		Middle-income		High-income	
	Female	Male	Female	Male	Female	Male	Female	Male
Secondary	0.080***	0.067***	0.109***	0.103***	0.073*	0.047	0.042	0.016
	(0.024)	(0.022)	(0.038)	(0.033)	(0.045)	(0.041)	(0.029)	(0.034)
University	0.156***	0.139***	0.234***	0.221***	0.101**	0.092*	0.120***	0.088**
	(0.027)	(0.030)	(0.048)	(0.051)	(0.049)	(0.058)	(0.034)	(0.042)
Other controls	Y	Y	Y	Y	Y	Y	Y	Y
Constant	Y	Y	Y	Y	Y	Y	Y	Y
N	120098	115739	41657	42119	42311	40615	36028	32904
R-squared	0.264	0.262	0.233	0.215	0.242	0.250	0.175	0.189

Notes: All regressions include country-year fixed effects. P-value in parentheses. Standard errors are clustered by year and country. N is number of observations. *** Significant at 1 percent level. ** Significant at 5 percent level. * Significant at 10 percent level.

In Table 1.6, I report the result with my sample split into urban and rural regions[39]. The results in Table 1.6 provide some interesting evidence. First, on average, the university-educated are happier than secondary educated in both urban and rural regions across all sets of countries. Second, the magnitude of education (both secondary and university as compared to primary) are bigger in rural than in urban areas. The results are consistent across all three sets of countries. Third, the magnitude of the direct effect of education on well-being is larger in urban and rural regions of low-income countries than in middle-and-high income countries[40].

[38] I also explored the magnitude of the indirect effect of education by gender across sets of countries. The magnitude of indirect effects is very similar across gender across all groups of countries, and the results are statistically insignificant. The results not reported for brevity.

[39] WVS uses a population size of the city/town to describe the settlements in which respondents lived. In this dissertation, my specification of rural is the town or city with a population size of 100,000 or less; and rural is a town or city with a population size greater than 100,000. A similar specification is used in previous papers (e.g., Easterlin et al., 2011; Berry and Okulicz-Kozaryn, 2009).

[40] The magnitude of indirect effects of education on well-being is similar across regions and across all groups of countries, and the results are statistically insignificant. For brevity, the results not reported.

Table 1.6: Relationship between education and well-being across countries by urban and rural, 1994-2014

	All sample		Low-income		Middle-income		High-income	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Secondary	0.038	0.113***	0.083**	0.147***	0.032	0.095*	0.024	0.039
	(0.028)	(0.026)	(0.040)	(0.039)	(0.052)	(0.050)	(0.036)	(0.031)
University	0.139***	0.165***	0.227***	0.237***	0.085	0.114*	0.116**	0.126**
	0.037	0.034	0.050	0.060	0.072	0.063	0.042	0.038
Other controls	Y	Y	Y	Y	Y	Y	Y	Y
Constant	Y	Y	Y	Y	Y	Y	Y	Y
N	78829	91456	27358	38484	29721	29617	21697	23205
R-squared	0.260	0.271	0.223	0.228	0.251	0.262	0.164	0.185

Notes: All regressions include country-year fixed effects. P-value in parentheses. Standard errors are clustered by year and country. N is number of observations. *** Significant at 1 percent level. ** Significant at 5 percent level. * Significant at 10 percent level.

My results so far provided compelling evidence that education and well-being have a universal positive correlation. Can it be that, over the years, the same level of education that once seemed satisfactory might result in less well-being? I discuss this hypothesis below.

Table 1.7 reports the result that captures the relationship between well-being and education for four waves. In this analysis, I include only those countries for which survey data overlap across all the waves (Table A.1 provides a detailed list of countries and years included in each wave). However, for this analysis, I have data limitations. There is insufficient data in each wave to analysis the well-being education relationship across all three sets of countries. Thus, I split my dataset by waves and ignore the analysis by development levels, which is an important avenue to explore in the future with a larger data set.

Table 1.7: Relationship between education and well-being across survey waves, 1994-2014

	Wave 3		Wave 4		Wave 5		Wave 6	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Secondary	0.200***	0.302***	0.060	0.200***	0.042	0.174***	0.023	0.115***
	(0.05)	(0.06)	(0.03)	(0.06)	(0.05)	(0.04)	(0.03)	(0.04)
University	0.260***	0.490***	0.153***	0.427***	0.112***	0.356***	0.089**	0.310***
	(0.07)	(0.08)	(0.05)	(0.06)	(0.04)	(0.05)	(0.04)	(0.05)
Other Controls	Y	Y	Y	Y	Y	Y	Y	Y
Constant	Y	Y	Y	Y	Y	Y	Y	Y
N	53860	62823	43950	48245	63052	68554	74975	77324
R-squared	0.323	0.298	0.203	0.184	0.255	0.228	0.216	0.182

Notes: All regressions include country-year fixed effects. P-value in parentheses. Standard errors are clustered by year and country. N is number of observations. *** Significant at 1 percent level. ** Significant at 5 percent level. * Significant at 10 percent level.

Table 1.7 report the results, which test my hypothesis 1.3. Columns 1, 3,5, and 7 reports the results for waves 3, 4, 5, and 6, respectively, using the regression in column 6 of Table 1.2. In columns 2, 4, 6, and 8, I report the results without household income. The results in columns 1, 3, 5, and 7 show that the difference in well-being between different levels of education differs across the survey waves. In other words, the difference in well-being between university and primary; and between secondary and primary has decreased over time. For example, the magnitude of well-being from secondary education drops significantly from 0.20 points (significant at 1% level) in wave 3 to 0.02 points (statistically insignificant) in wave 6: i.e., around 10 times drop in well-being measure. Similarly, the coefficient of university education on well-being drops from 0.26 points (significant at the 1 % level) in wave 3 to 0.09 points in wave 6 (significant at the 10% level): more than 2.5 times drop in well-being measure. The difference in well-being for university education between the waves (specifically between wave 3 and wave 6) is statistically significant[41]. This result provides clear evidence that the direct effects of education on well-being have declined over time.

To represent these results visually, I plot the results for four waves in Figure 1.3 below. In Figure 1.3 (both graphs), the vertical axis shows the well-being levels, while the horizon axis shows the survey waves.

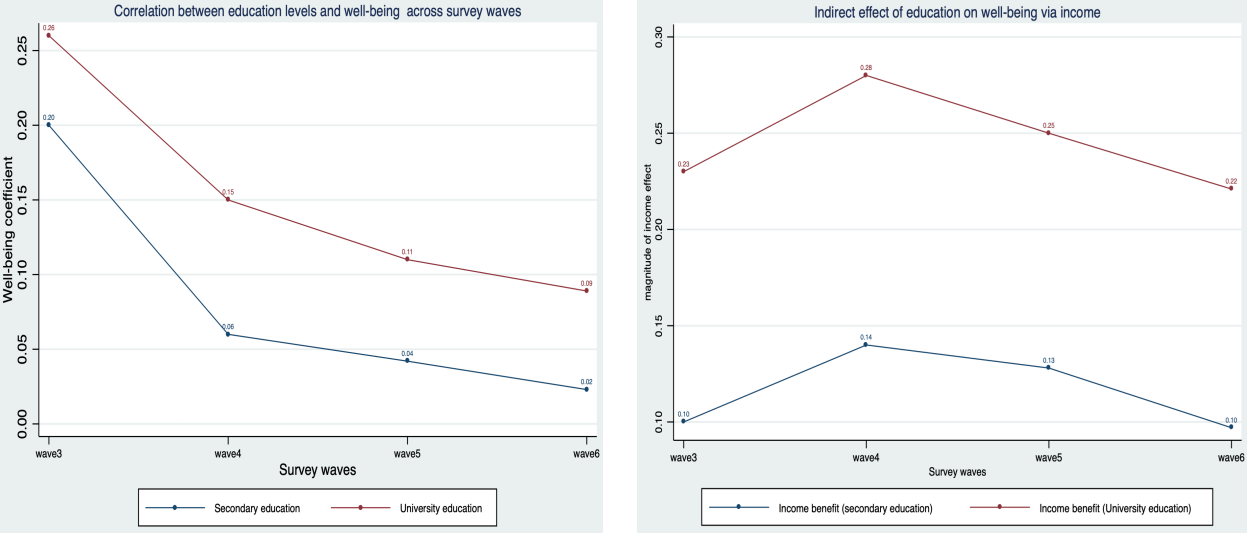
The red and blue lines in Figure 1.3 (left panel) represent the coefficient for university and secondary education, respectively, as given in columns 1,3, 5, and 7 of Table 1.7. In other words, it represents the direct effect of education on well-being over time. In the right panel, the red and blue lines represent the income effect of university and secondary education as compared to primary education, respectively, on well-being.

Figure 1.3 (left panel) shows that the university-educated are happier than the secondary educated, as compared to primary educated, over time: the red line is above the blue line across all waves. The figure also shows that the direct benefit of education has declined over time. The graph

[41] The test results not reported for brevity.

in the right panel shows that the income benefit from university vs. primary education is higher than income benefit from secondary vs. primary education, across all the waves.

Figure 1.3: The direct and indirect (income) effect of education on well-being over time, 1994-2014



Notes: In Figure 1.3 (both graphs), the vertical axis shows the well-being levels (left panel) and income-benefit (right panel), while the horizon axis shows the survey waves.

In summary, the results provide some interesting findings. First, the direct effect of education on well-being has decreased significantly over time. The result implies that the difference in well-being between university vs. primary and secondary vs. primary is smaller in each successive wave. Second, a large portion of the total benefit of education can be attributed to higher income across all waves. It implies a strong correlation between higher education and household income over time. This result is consistent with my hypothesis 1.3.

One possible reason for the decline in the correlation between education and well-being over-time can be attributed to the escalating supply of more educated people, as discussed in section 2. Consistent with this idea, my data also indicate that the percentage of primary educated people has decreased in each successive wave[42]. In contrast, the percent of university-educated people has increased over the years[43]. These statistics, at least to some extent, suggest that the

[42] Declined from 43% in wave 3 to 42% in wave 4; 40% in wave 5, and 34% in wave six.
[43] Increased from 22% in wave 3 to 38% in wave 6.

supply of less-educated people has decreased, while the supply of higher-educated people has increased over the years[44].

Next, I split my samples by gender across waves. The results are reported in Table 1.8. The results show both females and males with university education are happier than those with secondary education across all waves. On average, the association between education and well-being is larger for females than males[45]. This pattern is consistent across all the waves. For both females and males, the direct effect of education on well-being is larger in wave 3. However, the effect declines over time. The results reinforce the results discussed in Table 1.7 and suggest that the decline in the direct effect of education over time implies to both females and males[46].

Table 1.8: Relationship between education and well-being across different survey waves by gender, 1994-2014

	Wave 3		Wave 4		Wave 5		Wave 6	
	Female	Male	Female	Male	Female	Male	Female	Male
Secondary	0.211***	0.194***	0.075	0.0170	0.096**	0.018	0.010	0.061
	(0.060)	(0.057)	(0.058)	(0.037)	(0.038)	(0.042)	(0.040)	(0.038)
University	0.267***	0.256***	0.180**	0.147**	0.154***	0.075	0.121**	0. 74*
	(0.069)	(0.092)	(0.067)	(0.054)	(0.044)	(0.047)	(0.046)	(0.041)
Other controls	Y	Y	Y	Y	Y	Y	Y	Y
Constant	Y	Y	Y	Y	Y	Y	Y	Y
N	27789	26071	21602	22348	32118	30934	38589	36386
R-squared	0.34	0.31	0.20	0.21	0.25	0.26	0.22	0.22

Notes: All regressions include country-year fixed effects. P-value in parentheses. Standard errors are clustered by year and country. N is number of observations. *** Significant at 1 percent level. ** Significant at 5 percent level. * Significant at 10 percent level.

Next, I split my sample into urban and rural areas to explore the association between education and well-being by regions. The results in Table 1.9 show that across all the waves, the university-educated are happier than secondary educated in both urban and rural regions. On average, university and secondary educated people in rural areas are happier than in urban areas across all the waves. The direct effect of education on well-being is bigger in wave 3 in both rural and urban regions. More specifically, over time, the statistically significant of the direct effect of

[44] Note that these statistics do not provide any information for labor markets; it only gives some ideas about the distribution of educated people across sets of countries.
[45] Except for wave 6, where males with university education are happier than females.
[46] I also explored the magnitude of the indirect effect of education by gender across waves. The magnitude of indirect effects is very similar across gender across all waves. The results not reported for brevity.

education on well-being declines in rural areas and becomes statistically insignificant in urban areas. The results imply that the decline in the association between education and well-being over time holds for both the rural and urban areas.

Table 1.9: Relationship between education and well-being across different survey waves by urban and rural regions, 1994-2014

	Wave 3		Wave 4		Wave 5		Wave 6	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Secondary	0.129*	0.325***	0.041	0.118*	0.0156	0.084**	0.006	0.020
	(0.08)	(0.05)	(0.04)	(0.06)	(0.05)	(0.03)	(0.05)	(0.05)
University	0.256***	0.394***	0.094	0.227**	0.088	0.122***	0.055	0.105*
	(0.060)	(0.098)	(0.062)	(0.100)	(0.060)	(0.043)	(0.051)	(0.056)
Other Controls	Y	Y	Y	Y	Y	Y	Y	Y
Constant	Y	Y	Y	Y	Y	Y	Y	Y
N	20282	20405	13004	13881	20160	24014	25383	33156
R-squared	0.32	0.34	0.20	0.22	0.26	0.25	0.21	0.22

Notes: All regressions include country-year fixed effects. P-value in parentheses. Standard errors are clustered by year and country. N is number of observations. *** Significant at 1 percent level. ** Significant at 5 percent level. * Significant at 10 percent level.

1.6. Limitation of the study

The analyses presented in this study are, of course, not without limitations. Although World Values Survey data are the best data set available to me, it is cross-sectional data, which implies that it is difficult to establish causality. The cross-sectional data is not enough to capture the issue of unobserved heterogeneity (Gevaert et al., 2018). Thus, methodologies used in this study can only establish the linkage or correlation but not prove the direction of causation. It would have been better to have panel data in order to perform causal analysis. Unfortunately, such a dataset does not exist on a worldwide scale.

1.7 Conclusion

This study examines the relationship between education and well-being using the most extensive set of individual data from the World Values Survey across 90 countries. I have several interesting findings. First, women are generally happier than men. Unemployed have significantly lower well-being than employed. Married people are happier; individuals with higher household incomes are happier than those with lower incomes. These results are consistent with the results found in earlier

studies on well-being. Second, this study finds that globally, education has a monotonically positive relationship with well-being (i.e., well-being increases with higher education levels achieved). Results suggest that education influences well-being through other channels, income, and health being the main one. However, the magnitude of the income benefit is larger. In other words, although the economic significance of the direct effect of education on well-being is relatively small, its indirect effect via income is bigger. Third, I observe a positive monotonic relationship between well-being and education levels across different groups of countries (high, middle, and low-income countries). However, the direct effect of education is higher in developing countries. Also, the effect of education on well-being through income is larger and statistically significant in developing countries than in developed countries. Forth, on average, across all sets of countries, the direct effect of education on well-being is on females than males. The association between education and well-being is more pronounced in rural than in urban areas across sets of countries. However, the magnitude of the effects across gender and regions are larger in low-income countries. Finally, I find that the direct effect of education on well-being has reduced significantly over time.

The results demonstrate clear evidence of the positive direct effect of education on well-being and a bigger indirect effect via income. Intuitively, from an economic and policy perspective, if a determinant has a positive influence on well-being, the policy should foster it. However, since my data for this analysis is cross-sectional data, my findings cannot establish causality. Thus, my above analysis cannot be used for policy formulation. Nonetheless, I hope my simple analysis exposes several areas for future research on this important topic.

Chapter 2

Non-economic Factors and Well-being of Self-employed Women

2.1 Introduction

There has been a growing interest amongst scholars, government, and policy-makers and individuals in understanding the interplay between self-employment and well-being[47]. However, the popular conceptions and existing models of entrepreneurship are often built on normative theories of objective opportunity to pursue profit, firms' performances, positive earning, and financial accumulation (Shepherd et al., 2019)[48]. Previous research has also shown that many enter entrepreneurial activities or persist in their entrepreneurship even when and where there is no recognizable or foreseeable profit opportunity (Shir, 2015). Similarly, despite positive opportunity trends and profit projections, many entrepreneurs never progress beyond their initial intentions to start up their ventures (Kautonen, & Fink, 2015). Empirical evidence produced by entrepreneurship and economic scholars indicates that entrepreneurship cannot be properly understood as simply a profit-seeking activity and that its payoff structure is not yet well understood (Shepherd et al., 2019; Shir 2015; Benz, 2009; Van Praag & Versloot, 2007).

Over the years, entrepreneurship, economists and management scholars are becoming increasingly interested in understanding the other non-economic motives, such as well-being, to enter entrepreneurship rather than just profit maximization (Uy et al., 2013; Shir, 2015; Shepherd and Patzelt, 2017; Stephan, 2018; Shir et al., 2018; Wiklund et al., 2017). Despite claims that a

[47] Well-being is characterized as an individual's assessment of their overall quality and satisfaction with life (people's evaluation of their lives) according to their chosen criteria, which each individual set for him or herself, and it is not externally imposed (Diener et al., 1985).

[48] The definition of self-employment is usually attached to the discourse of the "entrepreneurial self" (Peters, 2001). The key characteristics of self-employed are creativity, willingness to take risks, innovativeness, high intrinsic motivation, skillfulness, and the ability to recognize opportunities (Anderson & Warren, 2011; Hendry, 2004), working alone, or having employees (De Moortel & Vanroelen, 2017). In this paper, I assumed a similar set of characteristics for self-employed, as defined by the previous literature. Thus, the words, business-owners, self-employed, and entrepreneurs are used interchangeably in this paper.

relationship exists between entrepreneurs and well-being, the evidence is mixed. For example, a number of studies find positive association between self-employment and life satisfaction (Wolfe et al., 2018; Kautonen et al., 2017; Przepiorka, 2017; Andersson, 2008; Binder and Coad, 2013, 2016; Andersson, 2008; Lindfors et al., 2007: Kolvereid, 1996; Blanchflower, 2000, 2004; Taylor 2004; Blanchflower and Oswald, 1998; Benz and Frey, 2004). While there is evidence that self-employment can have a detrimental effect on well-being (Zwan et al., 2018), as a result of work-family conflicts (Ford et al., 2007; Parasuraman and Simmers, 2001), high economic insecurity (Annink et al., 2016).

Entrepreneurial work can be a great source of personal fulfillment and creativity. The nature of entrepreneurial work embodies the process of self-actualizing one's human potential through purposeful, authentic, and self-organized activities that can lead to a fulfilling and fully functioning life (Shir et al., 2018: Wiklund et al., 2019). People attain greater well-being when engaged in activities that interest them and match their skill levels (Shir, 2015). On the contrary, it is rare for entrepreneurial journeys to follow a smooth path (McMullen and Dimov, 2013). Entrepreneurs experience various stressors such as extended working hours, high work effort, and unpredictable business environment, work-family conflicts, which might have a detrimental effect on their well-being. Thus, the relationship between entrepreneurs and well-being is not apparent.

Women and men entrepreneurs pursue entrepreneurship for a myriad of different reasons and are highly motivated by different sets of factors, such as income, wealth, and well-being (Wiklund et al., 2019; Shir et al., 2018; Shir 2015). For example, several earlier studies have shown that men are motivated to enter into entrepreneurship by mostly economic profitability, while women by various other factors such as self-satisfaction, better work-life balance, doing something fulfilling (Carranza et al., 2018; Stephan, 2018). Entrepreneurs reporting general negative satisfaction with business performance, or lower business profit may also express a significant increase in quality of life and higher well-being as a business owner (Kautonen et al., 2017; Klapper and Parker, 2011; Pogessi et al., 2016; Campos and Gassier, 2017). In other words, women might value non-economic outcomes more than men do; thus, women may feel happier even at the event of lower economic outcomes. This somewhat puzzling phenomenon could be a result of non-economic factors, such as greater autonomy and independence, self-realization, schedule flexibility, greater control over work and family times, and having a rewarding and attractive job

(Benz & Frey, 2008; Parasuraman & Simmers, 2001; Millan et al., 2013). However, we know little about how these non-economic factors affect the well-being of entrepreneurs, and more importantly, the way these factors influence the well-being of the men and women entrepreneurs. My paper will fill this gap.

Entrepreneurs are heterogeneous and may differ in rural and urban areas[49]. Furthermore, the economic dynamic of urban and rural areas differs for entrepreneurs. For example, urban areas may have higher population density, a better environment for business growth, better network, and more exchange of creative ideas (Acs et al., 2011). Such factors are likely to increase the well-being of entrepreneurs. On the other hand, higher competition, more stressors work, limited time for social life in urban areas might deter the well-being of entrepreneurs. While rural areas tend to offer a lower demand for products and services, and moderate growth prospects, entrepreneurs may feel compensated by lower living costs in general, better social network[50], or a more tranquil lifestyle, which may be preferred. Consistent with this, it is also not apparent whether the well-being gap between female and male entrepreneurs is different in rural and urban areas. As discussed, women entrepreneurs evaluate success differently than men. Thus, well-being might differ according to the personality trait of entrepreneurs. Furthermore, women entrepreneurs, especially in rural areas, have to face more discrimination and severe obstacles to run their business. Thus, women entrepreneurs operating a business under such a discriminatory environment might have relatively lower well-being than male entrepreneurs. My paper provides some evidence on the well-being of entrepreneurs across gender in rural and urban areas.

I have four goals for my second essay. First, I explore whether well-being differs between female entrepreneurs and male entrepreneurs. A priori is not obvious what should be the

[49] My specification of rural is the town or city with a population size of 100,000 or less; and rural is a town or city with a population size greater than 100,000. Refer to the footnote 39 for more information.
[50] Social networks are important for business growth; they increase the chance of survival in rural areas (Freire-Gibb & Nielsen 2014; Benneworth, 2004).

relationship between self-employment and the well-being of women relative to men. For example, women may choose to enter entrepreneurship to take advantage of flexible working hours, greater autonomy and independence, and balance work-family life, while men may see entrepreneurship as a profitable venture. On the other side, women may likely enter entrepreneurship due to lack of other job prospects, lack of income, or to stay busy, whereas men may enter entrepreneurship to build a career path. These factors may likely lower their well-being from being entrepreneurs. In other words, women may have different motivations when they enter self-employment and value success differently than men. It is likely that the correlation between well-being and self-employment might not be homogeneous across all contexts, and this relationship could differ substantially between women and men. Thus, it is important to explore the well-being gap between women and men entrepreneurs.

My second goal is to explore the relationship between female and male entrepreneurs in different sets of countries: high, middle, and low-income countries. There are several reasons to expect that the well-being of women and men entrepreneurs may differ between developed and developing countries. For example, women, as compared to men, in developing countries are generally "pushed" into starting a business by various necessities factors, such as lack of job prospects, pressure from family to earn income, escape from poverty, lack of education, etc. In developed countries, women like men are more likely to be "pulled" into starting a business and take advantage of business opportunities. Thus, the relative well-being of self-employed women is expected to differ in different sets of countries.

My third goal is to investigate whether the gap in well-being between women and men entrepreneurs is affected by various non-economic factors. Most of the literature on well-being and self-employment is predominantly focused on economic outcomes, such as size, sector, growth, employment, and profitability, to measure and compare the success of men and women entrepreneurs (Carranza et al., 2018; Moore 1990; Stevenson 1990). However, the important relationship between self-employed status and non-economic factors has not received as much attention in the literature. More importantly, the empirical evidence on the impact of non-economic factors on the well-being gap between female and male entrepreneurs is generally absent in prior studies. My paper will fill this gap in the literature. Finally, I explore the well-being gap between

female and male entrepreneurs in rural and urban areas. I also explore the influence of different non-economic factors on the well-being gap between female and male entrepreneurs in rural and urban areas.

There are four important contributions of my second essay. First, my study makes an important contribution to the literature on well-being gap between male and female entrepreneurs. Second, I extend my discussion on the well-being gap of male and female entrepreneurs across countries with different levels of development. Third, I discuss the influence of various non-economic factors on the well-being gap between female and male entrepreneurs. Finally, I investigate the difference in the well-being of male and female entrepreneurs in rural and urban areas.

To accomplish my goals, I use the individual-level data from two successive waves of the World Value Survey (fifth and sixth waves), which is a pooled cross-section of 168,725 individuals aged 15-99 living in 80 countries across the globe. The data were collected between the years 2005 and 2014. The dataset contains information on self-reported life satisfaction level (from 1 "completely dissatisfied" to 10 "completely satisfied") and other personal characteristics such as age, marital status, gender, employment status, education level, etc. Most importantly, the data contain a rich set of non-economic factors that can influence the well-being of male and female entrepreneurs.

My findings can be summarized as follows: First, there is a statistically significant difference in well-being between the self-employed women and self-employed men, where self-employed women report lower levels of satisfaction. Second, this result holds for lower and middle-income countries. However, self-employed women in higher-income countries appear to be happier as compared to self-employed men. Female entrepreneurs experience lowers well-being than male entrepreneurs in rural areas, especially in developing countries. Third, results suggest that various non-economic factors have a differential influence on the well-being of self-employed men and women. For example, I find the relative well-being of self-employed females is significantly reduced by a lack of self-confidence to run a business, stricter adherence to social

norms, and the presence of children. My results also suggest that better-educated self-employed women are happier than self-employed men.

The rest of the paper is organized as follows. Section 2.2 presents a more detailed discussion of previous literature and develops my hypotheses. Section 2.3 describes the data and discusses descriptive statistics. Section 2.4 describes the empirical specification and issues of reverse causality. Section 2.5 presents the main results. Section 2.6 details some limitations of the study and suggests directions for further research. Lastly, the final section concludes the paper.

2.2 Previous literature and hypothesis development

One of the main objectives of this paper is to evaluate how self-employment status affects women's well-being as compared to men's well-being in a wide cross-section of countries. There are several reasons to expect that the well-being of the female entrepreneurs may differ from the well-being of male entrepreneurs. For example, women are primarily motivated into self-employment by internal needs, such as independence, job satisfaction, self-determination and the desire to balance family and work responsibilities, and quality life (Buttner and Moore, 1997; Bennett & Dann, 2000; Jennings and Brush, 2013; McGowan et al., 2012). It seems that the motivations for women and men to choose their career path appears to be based on different personal and career aspirations. Several earlier studies have, for example, shown that the metric of success differs between self-employed men and women, where men view success in terms of achieving goals and higher profit, for women success may also mean having control over their own destinies, doing something fulfilling, better work-life balance (Carranza et al., 2018). It seems that women are less likely to decide to be self-employed than men in order to build business empires and gain strong economic profit. All these characteristics could generate higher well-being amongst self-employed females relative to males.

On the contrary, there are several reasons to expect self-employed women to have lower life satisfaction than self-employed men. First, several papers suggest that self-employed women experience more obstacles and constraints, such as restrictive social norms, unequal legal treatment, unfair family responsibilities, and financial discrimination then their male counterparts

(McGowan et al., 2012; Brush et al., 2009; Klapper and Parker, 2011; Pogessi et al., 2016; Campos & Gassier, 2017). Research on constraints faced by female entrepreneurs is relatively old (Hirisch, 1986), and most of these constraints could negatively affect the well-being of self-employed women relative to men.

Second, for many self-employed women, compared to self-employed men, increased freedom and flexibility of running a venture is tempered by discomfort in terms of work-family time conflict associated with stress and conflicting commitments, such as constant work demands, interest of children and other dependents, feelings of isolation and stress within personal relationships, dissatisfaction and a sense of guilt for neglecting children and family (Mcgowan et al., 2012; Duberley and Carrigan, 2013).

Third, previous literature also suggests that entrepreneurs who are "pulled" into starting a business (self-employed) by an opportunity (i.e., a creative idea) experience higher overall life satisfaction than those who are "pushed" by necessity (i.e., lack of job prospects) (Carranza et al., 2018; Binder and Coad, 2012; Aguilara et al., 2013; Annink et al.,2016; Seva et al., 2016a). Where push factors are associated with economic considerations and elements of necessity such as inadequate family income, lack of job opportunities, family pressure, and escape from poverty. While pull factors are associated with elements such as independence, self-fulfillment, entrepreneurial drive, and desire for wealth, social status, and power (GEM report 2017, 2019; McGowan et al., 2012; Ducheneaut 1997; Hisrich and Brush, 1985; Stokes et al., 1995). Also, previous literature shows that women are more likely to be "pushed" into being self-employed than men (McGowan et al., 2012; De Martino et al., 2006; Marlow and Carter, 2004; Buttner and Moore, 1999). For example, according to the GEM report (2018), women compared to men were more likely to start businesses out of necessity in 54 countries across the globe.

In theory, there are some reasons to expect that self-employed women will have higher well-being than men (for example, scheduling flexibility and work-life balance) and other reasons to expect them to have lower well-being than men (for example, obstacles and constraints and being pushed into entrepreneurs). It is not clear what the relationship should be. Thus, I believe

that the relationship between self-employment and well-being is likely to be different for women than it is for men. Thus, my hypothesis is:

Hypothesis 2.1: Well-being differs between female and male entrepreneurs.

My next hypothesis considers distinguishing the well-being of female and male entrepreneurs in different sets of countries. There are several reasons to expect that the well-being of women and men entrepreneurs may differ between developed and developing countries. People start, engage in, and leave entrepreneurship for a variety of different reasons and motivations (Carter et al., 2003). These factors may differ between countries and across gender. For example, as discussed above, "Push/necessity" and "Pull/opportunity" factors might differ across countries and gender[51]. In general, as discussed above, while explaining the different motivations for women to start their own businesses, many authors use "Push/necessity" and "Pull/opportunity" factors[52]. Therefore, it might be possible that opportunity-seeking entrepreneurs are more willing to see their business ideas come to fruition, while the necessity-based entrepreneurs are only operating for the short term until a better source of income comes along. As a result, the former group might be more driven by the sense of empowerment and derive more well-being, while the latter group might be less interested in empowerment and more focused on meeting basic needs, thus gain less satisfaction from being entrepreneurs.

Various authors tend to agree that in developing countries, the decision of women to enter entrepreneurship is predominantly due to push factors (Shir 2015; Hisrich and Brush 1985; Stokes et al. 1995); while it may not be the same for men. On the other hand, in high-income countries, women and men are more likely to be drawn to entrepreneurship by the "pull" factor, for instance, the need for a challenge, the urge to try something on their own, and to be independent and a solution to achieve personal and professional success. Whereas, in low-income countries, women foresee self-employment as the only option to overcome poverty, unemployment, and earn income; men, on the other hand, may choose entrepreneurial activities as a career path. Das (2008) found

[51] See Bosma and Kelley 2019; Carranza et al., 2018; Binder and Coad 2012; Annink et al., 2016; Holmen et al., 2011; Brush 1990; Buttner and Moore 1997, for detailed discussion.
[52] See Bosma and Kelley 2019; Carranza et al., 2018; Binder and Coad 2012; Annink et al., 2016; Holmen et al., 2011; Brush 1990; Buttner and Moore 1997, for detailed discussion.

that in Asian developing countries, women entrepreneurs are mostly based on "push" or necessity factors[53]. For example, some are either compelled by circumstances (e.g., death of a spouse, the family facing financial difficulties), while some start business just to keep themselves busy without any clear goals or plans (Tambunan, 2009; Das, 2000). Such necessity factors that propel women into entrepreneurs seem to be a common phenomenon in almost all developing countries. For example, according to the Global Entrepreneurship Monitor report 2019, "entrepreneurs, especially women, in low-income economies are indeed more likely to motivated by necessity than in wealthier economies." According to the report, among low-income economies, an average of 35% of entrepreneurs state they started their businesses because they had no better option for work. The above arguments indicate that in developing countries, pushed factors are likely to outweigh the pull factors for self-employed women as compared to self-employed men. Whereas in developed countries, as discussed above, the influence of push and pulled factors to enter into entrepreneurship may not differ substantially across gender. Thus, I expect a higher well-being gap between men and women entrepreneurs in developing countries than in developed countries. Thus, my hypothesis is:

Hypothesis 2.2: The well-being gap between female and male entrepreneurs is larger in developing countries than in developed countries.

My subsequent hypothesis in this chapter explores the association between various non-economic factors on the well-being of female and male entrepreneurs. Many non-economic factors (or, individual characteristics) such as self-empowerment, time flexibility, self-perception, work-life balance, education, presence of children at home, social and traditional constraints are frequently the driving forces behind women's choice of self-employment than men's (Carranza et al., 2018; Arai, 2000; Demartino and Barbato, 2003), For example, a recent study by Carranza et al. (2018) offers a taxonomy of different drivers to explain the possible reasons for the differences in outcomes of businesses run by women and men. Specifically, the authors identified four drivers: (1) choices and preferences (e.g., motivation, personality traits, preferences for wage and values) (2) endowments (e.g., assets, education skills and experience, network and social capital), (3) external constraints (e.g., legal, financial and cultural norms, family and social responsibilities),

[53] Countries of study include Singapore, Thailand, Vietnam, Cambodia, India, Pakistan, Philippines, Bangladesh, Nepal, and Sri Lanka,

and (4) internal constraints (e.g., low self-confidence, low self-perception, negative confidence and reluctant to seek credit). The authors argue that women's motivations and goals to enter self-employment are strongly influenced by many non-economic factors, including the stage in her life circumstances, career, family, preferences, and values. Thus, it seems that women evaluate their well-being using different metrics than men. The well-being of self-employed men tends to be more affected by economic profitability, while the well-being of women can also be influenced by various non-economic outcomes, as discussed above.

I identify the following four main non-economic determinants that, in theory, may influence the well-being of male and women differently: 1) lack of self-perception to run a business; 2) educational levels; 3) stricter adherence to social norms and traditional values; 4) the presence of children. The choice of these four factors is rooted in a recent study on women entrepreneurs by Carranza et al. (2018). Below, I provide a brief theoretical framework for these four factors and sketch my hypothesis against each determinant. While the list below is by no means exhaustive, I choose the non-economic variables based on the data available in the WVS.

First, lack of self-perception to be a business owner: studies have found that women have a lower perception of having sufficient skills to start a new business than men (Poggesi et al., 2016; Langowitz and Minniti 2007; Cech et al. 2011). The expectations of incompetence that arise from the perception of lack of skill and know-how to manage a business, the likelihood of failure may limit women's capacities to compete in and pursue business activities (Campos et al., 2015; Heilman 2008: Minniti, 2010). Studies from the African region have shown that women tend to be less confident than men regarding their relative abilities (Pulford and Colman, 1997; Soll and Klayman, 2004), which explains some of the gender differences in competition entry (Grosse and Riener, 2010). Farr-Wharton and Brunetto (2007) provide empirical evidence that women in Australia have a negative perception of public policies, such as not trusting the support from governmental business developers, which might negatively affect the performance of women entrepreneurs. One of the factors that hinder women entrepreneurs is negative perceptions of their confidence to participate and desire to grow in business activities (Hampel-Milagrosa, 2010). Based on the above discussion, I believe that the lack of confidence or negative self-perception can lower the well-being of female entrepreneurs more than male entrepreneurs.

Second, low levels of education: many studies highlight the benefits of higher education to entrepreneurship and business performance (Islam and Amin 2016; Malchow et al., 2016; Kobeissi 2010; Sluis et al., 2008; Fayolle and Kyroo 2008;). However, in many developing countries, women tend to have fewer years of education, mainly due to lower investment in daughters' education than sons. For example, in some Sub-Saharan African countries (e.g., Ghana and Kenya), self-employed women have fewer years of schooling than self-employed men (Hallward-Driemeier, 2013, World Bank, 2012). Education is important to enhance managerial ability, improve communication skills, expand the business network, and business development. Importantly, there is evidence that female entrepreneurs benefit more than male from education in terms of financial management, resource allocation, confidence, and work-family balance (Sluis et al., 2008). Therefore, I expect that more educated females will have higher satisfaction from being entrepreneurs than males.

Third, adherence to social norms and traditional values may affect women entrepreneurs differently than men. An increasing amount of literature suggests that the cultural and social norms deter women more than men from entering into self-employment and business ventures (Carranza et al., 2018; Acs et al., 2017; World Bank Group, 2016, 2018; Brush and Hisrich, 1991). Social norms are powerful prescriptions reflected in formal structures of society as well as its informal rules, beliefs, and attitudes (Klugman et al., 2014). In many developing countries, social norms are restrictive towards women than men. Such restrictive social usually encourage fear of retaliation if women's business is found to contradict societal prescriptions for female behavior (Rudman, 1998; Rudman & Glick, 1999). These fears have been raised to deter women from being assertive in competitive negotiation settings and starting a business venture, especially in men dominated societies (Amanatullah & Morris, 2010; Bowles, 2012). In Lebanon, for example, Jamali (2009) found that the primary obstacle mentioned by female entrepreneurs were normative pressures stemming from traditional attitudes of a conservative society where women are expected first and foremost to deliver on their family duties and responsibilities. Singer et al. (2018) illustrate that, in many developing countries, men are more likely to be involved in entrepreneurial activity than women, due to differences in culture, customs, social norms, traditions and self-perceptions regarding female's participation in the economic activities. Thus, it is likely that the stricter social

norms may have a more adverse effect on the well-being of female entrepreneurs than male entrepreneurs.

Finally, the presence of young children: women value their time with children higher than men. Women consider self-employment as a means of balancing work-family life than men (Mari et al., 2016). For example, empirical evidence from Australia and the United States shows that the availability of time to spend with their children is one of the factors that drive women, more than men, to enter into self-employment (Craig & Cortis, 2012). As discussed earlier, compared to men, women may consider entrepreneurship as a more suitable solution for achieving a better balance between work and family than that provided by paid employment. However, various research shows that entrepreneurship may not be a panacea for achieving such a balance (Parasuraman and Simmers, 2001; Poggesi et al., 2016). As compared to men entrepreneurs, women business owners still have to face role conflicts, especially in developing countries. Parasuraman et al. (2001, 1992) found the presence of young children has a significant negative effect on women entrepreneurs (i.e., more strongly related to psychological strain, overload roles, and depression levels) than men business owners. As a consequence, the amount of time and energy that women, especially with young children, are able to devote to their own businesses can be unsatisfactory to the point that it constrains the firm's performance (Jennings and McDougald, 2007; Stoner et al., 1990). Thus, compared to men, women with children are more likely to experience extra pressure in their attempts to balance family and business responsibilities, which can lead to lower well-being.

Based on the above discussion, I hypothesize that the following non-economic factors hinder women entrepreneurs more than men and therefore lead to relatively larger well-being gap:

1) *Lower self-perception to be a business owner*
2) *Lower education*
3) *Higher adherence to tradition*
4) *Presence of young children*

2.3 Data

I use data from the World Value Survey (WVS), which provides the largest set of individual-level data on well-being across the globe[54]. WVS data are available for the six successive waves (of five years' length) starting in 1980. For this current study, I use the data from the two latest wave: wave five (covering 2005-2009) and six (covering 2010-2014)[55]. The WVS interviews nationally representative samples of adult residents with a targeted minimum sample size of 1,000 respondents per country. The WVS include individual-level data on life satisfaction, age, education, gender, marital status, and other personal characteristics. Importantly, the data also includes a large set of non-economic factors such as self-perception to be a business owner, the importance of social norms and traditional values.

Life Satisfaction is commonly referred to as overall contentment with life (Frey 2008); a person's thoughts about his or her life (Deaton 2010); feeling good and enjoying life and wanting the feeling to be maintained (Layard, 2005, 2011). Individuals' life satisfaction Index (LSI) is measured as a discreet ordinal variable, where the highest reported subjective well-being reflects the highest well-being of an individual. In the World Value Survey, life satisfaction is assessed by asking respondents the following questions: "*All things considered, how satisfied are you with your life as a whole these days*", with responses on a scale from 1, which means 'completely dissatisfied', to 10, meaning 'completely satisfied".

To date, many articles in the economics literature use the measure of "life satisfaction", "well-being", and "happiness" interchangeably. These alternative measures are highly correlated and have similar coverages (Stevenson & Wolfers, 2008; Sandivk et al., 1993; Fordyce 1993; Layard, 2005). Various researchers and a large literature (Clark et al. 2018; Helliwell et al. 2019; Deaton 2013; Bennett et al., 2017; Nude et al., 2014; Howell and Howell, 2008; 2011, Frey 2008) support the use of LSI as a measure of well-being. According to the World Happiness Report 2019, happiness, as measured by the LSI provides a broader indication of human welfare than do

[54] www.worldvaluessurvey.org

[55] I limit my data to the latest two waves (five and six) because data for non-economic variables are not available in the earlier waves. However, I use wave 3 and 4 in addition to wave 5 and 6 to test my hypothesis 2.1 and 2.2. The results produce the same substantive conclusions (similar results but statistically weaker). For the earlier two waves (wave 1 and wave 2), data are nationally not representative of the country's population at the time of the survey (see Stevenson and Wolfers, 2008; Stevenson et al., 2013, for a detailed discussion).

measures of income, poverty, health, education, and good governance, since it captures the overall quality of life. Ample evidence points to a strong correlation between answers to subjective well-being and more objective measure of personal well-being, such as smiling (Di Tella and MacMulloch, 2005), laughing, heart rate measures, sociability (Stevenson & Wolfers, 2008; Diener, 1984), electrical activity in the brain (Steptoe et al., 2005), suicide (Di Tella et al., 2003), asking friends, families and other relatives (Layard 2005). Following the previous literature, I use the measures of life satisfaction, happiness, and well-being interchangeably.

Although WVS provides a large sample size and the inclusion of countries and individuals with different levels of income, there are three main limitations. First, the time gap between different waves is, on average, five years, and the set of overlapping countries in different waves are very limited (each wave covers a different set of countries). See Appendix Table A.1 for a detailed list of countries and years included in wave 5 and wave 6 of WVS. Second, since the data set in WVS is not a panel, there is no possibility for longitudinal analysis (Kruise et al., 2017). Third, because WVS's data are made up of a series of cross-sections, no individual person-specific effect can be included (Tella et al., 2003).

Table 2.1 reports the descriptive statistics for individual control variables used in this analysis. The average well-being score in my sample is 6.8 points, with a standard deviation of 2.3. Of the total sample size, 52% are female, and they report the same average well-being as male (6.8). My data have 23% of the sample with a university education, 35% with secondary, 34% with elementary education. The data indicates a monotonic relationship between different levels of education and average well-being. In other words, individuals with higher education are monotonically happier. Specifically, university graduates report higher well-being (7.1 points) as compared to individuals with secondary education (6.8 points), which in turn is higher than those with elementary (6.7 points); and the well-being of people without any formal education is the lowest (5.7 points) in my sample. The average well-being of employed, self-employed, and unemployed is 7 points, 6.6 points, and 6.1 points, respectively. Note that unemployed and self-employed individuals comprise only 10% and 12%, respectively, of my total sample size. The "other" category represents housewife, retired, and students with an average well-being score of 6.8 points.

On average, married people, who comprise more than half of my sample (63%), report the same levels of well-being as a single individual (25% of the sample size), which is 6.8 points. The average well-being of an individual with no child is 6.8 points, which is slightly higher than those with one or more children (6.7 points). Almost half of the sample size (48%) contains individuals whose household income falls in the middle-income category, and 30% of my sample consists of low-income households. My data show a monotonic relationship between household income and average well-being. Individuals from high-income households have the highest well-being (7.6 points), which decreases to 6.8 for those with middle household income and 6.1 for those with low household income.

Table 2.1: Descriptive statistics of control variables, 2005 – 2014

Variables	Mean	Sd.	%	N	Variables	Mean	Sd.	%	N
Well-being	6.8	2.3		168,725	*No. of Children*				
Gender					No Child	6.8	2.2	30%	48,435
Female	6.8	2.3	52%	88,744	One	6.7	2.3	16%	26,597
Male	6.8	2.3	48%	81,319	Two	6.7	2.3	25%	40,689
Education Level					3 or more	6.7	2.4	29%	48,168
No-Formal	5.7	2.6	7%	11,600	*Child Dummy*				
Elementary	6.7	2.4	34%	57,854	Yes	6.7	2.3	70%	115,454
Secondary	6.8	2.2	35%	59,841	No	6.8	2.2	30%	48,435
University	7.1	2.1	23%	39,662	*Income Level*				
Education dummy					Low	6.1	2.7	30%	48,783
Basic	6.5	2.5	41%	69,454	Middle	6.8	2.1	48%	76,032
Higher	7.0	2.2	59%	99,503	High	7.6	1.9	22%	35,167
Employment Status					*Self-Perception*				
Employed	7.0	2.1	42%	68,973	Yes	6.5	2.4	42%	65,473
Self-employed	6.6	2.3	12%	20,040	No	7.0	2.2	58%	91,531
Unemployed	6.1	2.5	10%	15,899	*Tradition*				
Others[a]	6.8	2.4	37%	61,227	Yes	6.8	2.4	58%	91,033
Marital-Status					No	6.8	2.1	42%	66,072
Married	6.8	2.3	63%	106,702					
Single	6.8	2.2	25%	42,842					
Others[b]	6.3	2.5	12%	20,207					

Notes: Mean represents the average of the well-being score against each specification of the control variable. *Sd* is the standard deviation; % is percentage of sample in my study; N represents the number of samples against each specification. (a) Other employment category includes retired, housewife, students and other. (b) Other Marital status category includes separated, widowed and divorce.

On average, the well-being of individuals who agree that men make better business executives than women, which comprise 58% of my sample, is 6.5 points, lower than those individuals who do not agree with such statement (7.0 points). More than half of my sample (58%) believe that it is important to follow the tradition and adhere to the social norms handed down by one's religion or family; they report well-being of 6.8 points, which is the same as those individuals

who believe otherwise. More than half of my sample size (59%) is comprised of individuals with higher education, and they report higher well-being (7.0 points) as compared to individuals with basic education (6.5 points). Around 70% of my sample comprises of people with one or more children, and they report well-being of 6.7 points, slightly lower than those with no child (6.8 points).

2.4 Empirical Methodology

I use a standard well-being function where individuals' reported well-being score is regressed on various individuals' characteristics (see, for example, Tella et al., 2003; Castriota, 2006). Precisely, my dependent variable is the self-reported life satisfaction level with values from 1 (dissatisfied) to 10 (satisfied)[56]. I include a set of personal characteristics, commonly included in well-being regression, as my control variables, such as education, age, number of children, income decile[57] and, marital status[58]. The description and sources for the dependent and independent variables are included in Table B.1 in the appendix B. I have two empirical models in this chapter. First model is as follows:

$$WB_{ict} = \beta_1 F_{ict} + \beta_2 SE_{ict} + \beta_3 F_{ict} * SE_{ict} + \beta_4 X_{ict} + \alpha_{ct} + e_{ict} \qquad (2.1)$$

Where i denotes individuals, c denotes countries, t denotes time, α_{ct} are country-year fixed effects. WB is well-being, F is a dummy variable for females, SE is a dummy for self-employed[59], X is a vector of control variables, e_{ict} is an idiosyncratic error. The country-year fixed effect captures all common factors that could affect average well-being and control variables in the same country in a year of the survey. The error terms are clustered at the country-year level to allow for

[56] I assume that across individuals, the scale of life satisfaction (terms "satisfied," "dissatisfied," etc. have the same meaning. These assumptions are not unreasonable (refer Hartog, & Oosterbeek, 1998 for detail discussion)

[57] Note that the WVS data does not contain the person's income, only the decile of the income distribution within which it lies, i.e., information on income is available on individuals' relative income and not on absolute income. However, relative income shows similar influences on individuals' satisfaction as absolute income (Salinas-Jimenez et al., 2012)

[58] These variables have been commonly used in the previous literature as potential determinants of social well-being. For example, see Helliwell et al. (2019); Deaton (2010); Powdthavee (2015); Di Tella et al. (1997, 2005); Selim (2008) for details.

[59] Note that the self-employed dummy is coded as follows: 1 if self-employed, 0 if the respondent's employment status is other categories: such as employed, unemployed, retired, housewife, or students. Therefore, results show how well-being measure of self-employed is different from other categories (i.e., omitted categories)

an unspecified correlation between individual-level observations in each country-year combination.

I use my model 2.1 to test my hypothesis 2.1: i.e., I examine whether well-being differs between female and male entrepreneurs. Specifically, my focus of interest is on the β_3, i.e., I focus on the interaction of female and self-employed dummies and test whether the well-being of self-employed women differs from the well-being of self-employed men.

I run the model 2.1 first on the full sample, and then I split my sample into three subsamples based on the country level of development: low, middle, and high level, based on the World Bank classification. Thus, I explore whether my results hold at different levels of economic development, which test my hypothesis 2.2. I also use this model to explore the well-being gap between female and male entrepreneurs in rural and urban areas.

My next model helps me understand the influence of various non-economic factors (discussed above) on the "well-being gap" between self-employed women and men. To capture this association, I use the triple interaction of gender (female dummy), self-employed dummy and, non-economic factors.

$$WB_{ict} = \beta_1 F_{ict} + \beta_2 SE_{ict} + \beta_3 F_{ict} * SE_{ict} + \beta_4 NE_{ict} * F_{ict} + \beta_5 NE_{ict} * SE_{ict} + \beta_6 NE_{ict} * F_{ict} * SE_{ict} + \beta_7 X_{ict} + \alpha_{ct} + e_{ict} \qquad (2.2)$$

The model 2.2 is an extension of my model 2.1: thus, i denotes individuals, c denotes countries, t denotes time, α_{ct} are country-year fixed effects. WB is well-being, F is a dummy variable for females, SE is a dummy for self-employed, X is a vector of control variables, e_{ict} is an individual-country-time idiosyncratic error. My error term is clustered at the country-time level to allow for an unspecified correlation between individual-level observations in each country-year combination.

In model 2.2, I add non-economic factors (NE) and their interaction. Specifically, I add other non-economic factors such as self-perceptions to run a business, adherence to traditional norms and social values, child dummy, and education dummy, separately among the control variables given by vector X. The self-perception dummy is equal to one if a person agrees or

strongly agrees with this statement: “On the whole, men make better business executives than women do.” The tradition dummy equals to one if a person is like or very much like this person: “Tradition is important to this person; to follow the customs handed down by one’s religion or family.” The children dummy equals to one if there is the presence of children (1 or more) in the family. Finally, my education dummy equals to one if the individual has higher education. Table B.1in appendix B provides more detailed descriptions of how I constructed these and other control variables for my study.

The main focus in model 2.2 is on the triple interaction coefficient $\beta_{6.}$ The triple interaction captures how the non-economic factors, “NE,” influences the relative gap in well-being between women and men entrepreneurs. I ran the model 2.2 four times separately for each NE factor. Thus, each NE factor has a separate coefficient. Because I have triple interaction in the regression, all the double interactions have to be included, captured by the coefficients β_4, which captures how the other non-economic factors influence all females relative to males, and β_5, which captures how non-factors influence all self-employed. However, I do not focus my discussion on these double interactions, because my objective is to see how the non-factors affect the relative well-being of self-employed men and women, captured by the coefficients β_6.

2.4.1 Causality

It is important to clarify that my study does not aim to establish the causality of the relationship between self-employed and well-being. For example, self-employed may be happier than wage workers because their self-employment status allows them more independence, freedom, and flexibility. This would imply that causality runs from self-employment to happiness, i.e., the ‘direct causality”. On the other side, happier people are generally more creative and enthusiastic and may be more likely to start a business and remain self-employed. This would imply that causality runs from happiness to self-employment, i.e., the “reverse causality.” Thus, it is not obvious whether the choice to become self-employed causes higher happiness or if higher happiness makes people more likely to choose self-employment. In other words, the direction of causality is not obvious. While establishing such causal nature is important, it is beyond the scope of this paper because I lack adequate data to identify such causality credibly. Nevertheless, I believe that given my data structure and the importance of issues, I can adequately answer other

equally important questions on well-being: (1) how self-employment status affects the well-being gap between female and male entrepreneurs; (2) how non-economic factors affect the well-being gap. I believe that I can adequately address these questions because my focus in this paper is on the *relative difference* in well-being between female and male entrepreneurs and how these relative differences are affected by various non-economic factors.

To test the relative difference, I focus on coefficient β_3 in model 2.1, and coefficient β_6 in model 2.2. I believe that reverse causality will not materially affect the relative difference. In other words, reverse causality only affects the overall effect of self-employment on the well-being, capture by the coefficient β_2. It is not clear why the reverse causality would affect men and women entrepreneurs differently. However, as I discussed above, direct causality may have a differential impact on men and women entrepreneurs.

2.5 Results

Table 2.2 reports the results from my model 2.1 to test my hypothesis 2.1. The results in the first column indicate the coefficient estimate of my baseline regression, where individuals' well-being score is regressed on various individual characteristics such as gender, age, employment status, education level, marital status, and income level. In column 2, I add the interaction between gender and self-employment. In column 3, I conduct a robustness check by including the sample for only self-employment status.

First, I briefly describe the results for my other control variables, then focus on my main interest, which is the interaction coefficient β_3. My results indicate the predicted pattern for all my control variables. I find that age has a non-linear U-shaped relationship with well-being. Women are generally happier than men. However, the magnitude of the difference is small: the coefficient is equal to 0.1, which is relatively small to the well-being scale of 1-10. Employed have slightly lower well-being than those other categories (omitted category), while unemployed have significantly lower well-being (the magnitude is substantial, almost half a point difference in well-being). I observe a monotonic relation between well-being and education, i.e., higher well-being with higher education level achieved (results are statistically significant at the 1% level). Similarly, income dummies are highly significant, and the magnitude is economically and significantly large.

Table 2.2: Relationship between well-being and self-employed in a wide cross-section of countries and across gender, 2005-2014

	(1) WB	(2) WB	(3) WB
Female	0.102***	0.115***	0.017
	(0.00)	(0.00)	(0.43)
Female* self-employed		-0.101***	
		(0.009)	
Age	-0.047***	-0.047***	-0.019***
	(0.00)	(0.00)	(0.01)
Age squared	0.0004***	0.0005***	0.0002***
	(0.00)	(0.00)	(0.01)
Marital-Status			
Married	0.478***	0.478***	0.386***
	(0.00)	(0.00)	(0.00)
Single	0.213***	0.214***	0.236***
	(0.00)	(0.00)	(0.00)
No. of Children			
One	-0.039	-0.039	-0.041
	(0.12)	(0.12)	(0.53)
Two	-0.002	-0.002	-0.008
	(0.93)	(0.93)	(0.90)
3 or more	0.068**	0.068**	0.013
	(0.04)	(0.04)	(0.83)
Education			
Elementary	0.202***	0.203***	0.145
	(0.00)	(0.00)	(0.13)
Secondary	0.279***	0.279***	0.127
	(0.00)	(0.00)	(0.20)
University	0.361***	0.362***	0.143
	(0.00)	(0.00)	(0.15)
Income level			
Middle	0.772***	0.773***	0.714***
	(0.00)	(0.00)	(0.00)
High	1.393***	1.393***	1.438***
	(0.00)	(0.00)	(0.00)
Employment Status			
Employed	-0.017	-0.014	
	(0.44)	(0.53)	
Self-employed	-0.045	-0.006	
	(0.17)	(0.87)	
Unemployed	-0.404***	-0.401***	
	(0.00)	(0.00)	
Constant	6.460***	6.453***	5.936***
	(0.00)	(0.00)	(0.00)
Observations	148205	148205	18344
R-squared	0.21	0.21	0.22

Notes: Column 1 reports the regression coefficient for all samples without the interaction term. Column 2 reports the coefficients for all samples with the interaction between gender and self-employed. Column 3 limits the sample to self-employed only. All regression includes country-year fixed effects. Standard errors are clustered by country and year. P-value in parentheses. *** Significant at 1 percent level. ** Significant at 5 percent level. * Significant at 10 percent level.

Among different relationship status, married people are the happiest, followed by the single as compared to those divorced or separated (omitted variables). The magnitude is substantial, equal to 0.5 and 0.2 for marriage and single, respectively. Individuals with high household income are associated with 1.4 higher well-being than those in low household income (omitted category). Having a middle household income has, on average, about 0.8 higher well-being than those with low household income.

The results for the control variables reported in Table 2.2 are a corroboration of earlier research on well-being[60], suggesting that my data and model specifications are appropriate for well-being analysis. My main variable of interest is on the interaction of female and self-employed dummy, given in my model 2.1 by β_3 coefficient. I find that the interaction is negative and statistically significant. Although the magnitude of the interaction term (column 2) is statistically significant, the economic significance is relatively small. However, it is about equal to the general increase in well-being females have over males in my sample. My result suggests that compared to the self-employed male, the well-being of self-employed females is lower by 0.10 points, which is about 4.4% of one standard deviation on the well-being measure. In other words, my result reveals that women, in general, are happier than men across countries, but the well-being of self-employed females is lower than the well-being of self-employed males. However, when only self-employment status is included in the regression (column 3), the well-being gap between female and male entrepreneurs is not statistically significant. It may be because of limited data for this analysis. Note that self-employed individuals comprise only 12% of my total sample among employment status. Thus, I use the regression in column 2 of Table 2.2, which includes a sample of all the employment status for my subsequent analysis[61].

Table 2.3 reports the result with a sample split into two geographical regions: urban and rural areas[62]. The results in columns 1 and 2 show that women are happier than men in both urban and rural areas. Interestingly, results in columns 3 and 4 show that the well-being of female

[60] Benchflower and Oswald, (2008); Plouffe et al. (2017), among others for detailed.
[61] Refer to footnote 59 for more information.
[62] WVS uses a population size of the city/town to describe the settlements in which respondents lived. In this paper, rural refers to the town or city with a population size of 100,000 or less; and rural refers to a town or city with a population size greater than 100,000. A similar specification is used in previous papers (e.g., Easterlin et al., 2011; Berry and Okulicz-Kozaryn, 2009). As a precautionary measure, regressions were run with other size specifications, but the results were robust.

entrepreneurs is smaller than the well-being of male entrepreneurs in both regions. However, the well-being gap is statistically significant in the rural area. The magnitude of the well-being gap, -0.15 points, is statistically significant at the 1% level. The difference in the well-being gap between female and male entrepreneurs in urban areas is not statistically significant. The results imply that women in rural areas suffer loss from being self-employed, while men do not.

Table 2.3: Relationship between well-being and self-employed in urban and rural areas, 2005-2014

	(1) Urban	(2) Rural	(3) Urban	(4) Rural
Female	0.080***	0.095***	0.102***	0.134***
	(0.002)	(0.002)	(0.00)	(0.00)
Female * self-employed			-0.096	-0.152***
			(0.14)	(0.007)
self-employed			0.019	0.118**
			(0.68)	(0.02)
Employment Status				
Employed	-0.006	-0.023		
	(0.86)	(0.54)		
Self-employed	-0.079*	-0.019		
	(0.09)	(0.70)		
Unemployed	-0.324***	-0.434***		
	(0.00)	(0.00)		
Constant	Y	Y	Y	Y
Controls	Y	Y	Y	Y
Observations	47467	61979	48706	62779
R-squared	0.21	0.21	0.21	0.21

Notes: All regressions include country-year fixed effects. Standard errors are clustered by country and year.
P-value in parentheses. *** Significant at 1 percent level. ** Significant at 5 percent level. * Significant at 10 percent level.

In Table 2.4, I report the results with sample (column 2 of Table 2.2) splits into the low, middle, and high-income countries, as well as a combined low- and middle-income sample. Overall, the results for three samples (columns 1,2 and 3) are mostly similar qualitatively; however, there are some interesting observations. For example, the loss of well-being for being unemployed in high-income countries is more than double the loss in low-income countries. In other words, unemployed in low-income countries are not hurt, in terms of well-being, as much as those unemployed in high-income countries. The well-being relationship with education is more statistically significant in low-income countries. I observe a monotonic relationship between income-level and well-being in all three sets of countries, although results are more statistically significant in low-income countries. Married people are the happiest in all three sets of countries, followed by single individuals (those not married), as compare to other groups.

Table 2.4: Relationship between well-being and self-employed in different sets of countries with difference levels of economic development, 2005-2014

	(1) LIC	(2) MIC	(3) HIC	(4) LIC & MIC
Female	0.108**	0.107***	0.128***	0.109***
	(0.01)	(0.01)	(0.00)	(0.00)
Female*self-employed	-0.176***	-0.115*	0.155**	-0.159***
	(0.00)	(0.09)	(0.04)	(0.00)
Age	-0.0306***	-0.0460***	-0.0520***	-0.0387***
	(0.00)	(0.00)	(0.00)	(0.00)
Age2	0.0003***	0.0004***	0.0005***	0.0004***
	(0.00)	(0.00)	(0.00)	(0.00)
Employment Status				
Employed	-0.007	0.032	-0.039	0.007
	(0.89)	(0.39)	(0.15)	(0.82)
Self-employed	0.036	0.04	-0.061	0.019
	(0.52)	(0.52)	(0.31)	(0.64)
Unemployed	-0.223***	-0.470***	-0.581***	-0.351***
	(0.00)	(0.00)	(0.00)	(0.00)
Marital-Status				
Married	0.385***	0.472***	0.579***	0.435***
	(0.00)	(0.00)	(0.00)	(0.00)
Single	0.288**	0.174***	0.171***	0.223***
	(0.02)	(0.00)	(0.00)	(0.00)
No. of Children				
One	-0.041	-0.037	-0.049	-0.045
	(0.48)	(0.38)	(0.17)	(0.17)
Two	-0.051	-0.031	0.056	-0.045
	(0.44)	(0.56)	(0.11)	(0.25)
3 or more	0.057	0.067	0.092**	0.055
	(0.41)	(0.26)	(0.02)	(0.21)
Education				
Elementary	0.142*	0.078	0.198	0.163**
	(0.06)	(0.50)	(0.19)	(0.011)
Secondary	0.228**	0.147	0.276*	0.231***
	(0.03)	(0.29)	(0.07)	(0.00)
University	0.362***	0.204	0.384**	0.316***
	(0.00)	(0.13)	(0.02)	(0.00)
Income level				
Middle	1.047***	0.644***	0.593***	0.841***
	(0.00)	(0.00)	(0.00)	(0.00)
High	1.939***	1.309***	0.959***	1.597***
	(0.00)	(0.00)	(0.00)	(0.00)
Constant	5.473***	6.778***	7.099***	6.114***
	(0.00)	(0.00)	(0.00)	(0.00)
Observations	45859	54475	47871	100334
R-squared	0.19	0.20	0.13	0.21

Notes: All regressions include country-year fixed effects. Standard errors are clustered by country and year.
P-value in parentheses. ** Significant at 5 percent level. * Significant at 10 percent level.
LIC is low-income countries ; MIC is middle-income countries ; HIC is High income-countries.

My main focus of attention is on the coefficient of interaction between gender and self-employed, which captures the relative gap in well-being. I notice that the self-employed women are less happy than self-employed men in low-and middle-income countries, while in high-income countries, it is just the opposite. The magnitude of the well-being gap is 0.17 (significant at 1%), 0.12 (significant at 10%), and 0.15 (significant at 5%) in low, middle and high-income countries, respectively.

The difference in the well-being gap between low-and middle-income countries, i.e., magnitudes of 0.05, is not statistically significant according to the t-test.[63] Thus, I combine the sample of low-and middle-income countries, and I report the result in column 4 of Table 2.4. I refer to the sample in column 4 (low and middle combined) as developing countries and the one in column 3 as developed countries. Results in column 4 show that the well-being of self-employed women is lower than the well-being of self-employed men, and the same is not true in developed countries. The magnitude of the well-being gap in developing countries (0.16 points) is statistically significant. Thus, my result supports my hypothesis 2.1.

Table 2.5: Relationship between well-being and self-employed in urban and rural regions of developed and developing countries, 2005-2014

	Developing countries		Developed countries	
	(1) Urban	(2) Rural	(3) Urban	(4) Rural
Female	0.092***	0.149***	0.130**	0.073*
	(0.00)	(0.00)	(0.05)	(0.09)
Female*self-employed	-0.114	-0.209***	0.052	0.158
	(0.13)	(0.00)	(0.53)	(0.23)
Self-employed	0.009	0.145**	0.057	0.006
	(0.86)	(0.01)	(0.43)	(0.94)
Other controls	Y	Y	Y	Y
Constant	Y	Y	Y	Y
Observations	35352	46304	13354	16475
R-squared	0.22	0.21	0.13	0.13

Notes: All regressions include country-year fixed effects. Standard errors are clustered by country and year. P-value in parentheses. ** Significant at 5 percent level. * Significant at 10 percent level.

Table 2.5 reports the results with samples from urban and rural areas. In columns 1 and 2 of table 2.5, I split the sample from developing countries (column 4 in Table 2.4) into urban and rural areas, respectively. In columns 3 and 4, I split the samples from developed countries (column 3 of Table

[63] T-test result not reported.

2.4) into urban and rural areas, respectively. The results show that females are happier in both urban and rural areas across all stages of development. However, the well-being gap between males and females is more statistically significant in the rural area of developing countries and urban areas of developed countries. Interestingly, the well-being gap is negative for self-employed females in both urban and rural areas of developing countries. The magnitude of the well-being drop is, however, statistically significant for rural samples. Although the well-being gap between self-employed females and males is positive in rural and urban areas of developed countries, the results are statistically not significant. The results imply that women in rural areas from developing countries suffer loss from being self-employed, while men do not.

There could be many reasons why self-employed women are relatively less happy than self-employed men. As I discussed in my introduction, the metric of success and well-being differs substantially between women and men. While self-employed men may describe happiness in terms of achieving goals and higher profits, for women, happiness also means having control over their own destinies, building ongoing relationships with clients, doing something fulfilling, or achieving a better work-life balance (Carranza et al., 2018). The literature has so far highlighted the well-being of self-employed on economic outcomes such as size, sector, growth, employment, and profitability to measure the well-being and success of the entrepreneurs in general (Carranza et al., 2018; Moore 1990; Stevenson 1990). The general conclusion on well-being based only on economic outcome presents a too narrow and inconclusive view of happiness. For example, as argued by Carranza et al. (2018), if women value non-economic outcomes more than men do, they may feel happier even at the event of lower economic outcomes. Thus, in my subsequent results, I examine the influence of different non-economic factors on the relative well-being of women and men across countries.

Table 2.6 reports the results using my model 2.2. As discussed above, different non-economic factors could affect the well-being of male and female entrepreneurs differently. To capture this, I include the triple interaction terms between gender, self-employment, and non-economic factors. More specifically, I run the model 2.2 separately (four times) by adding the dummies for these four non-economic factors and their interaction independently in each regression. Specifically, I add dummies for self-confidence to run a business, education level,

presence of children, and adherence to traditional norms and social values. Note that I have year and country fixed effects included in all the regression, but not reported in the Table. My goal is to test which of the non-economic variable have a differential influence on the relative well-being of female and male entrepreneurs. Thus, my main focus here is on the triple interaction of non-economic variables with gender and self-employment dummies (NE * F * SE), given by the coefficient β_6 in model 2.2. The results are reported in Table 2.6. The estimated coefficients of the control variables (other than non-economic factors) are consistent with the results reported in column 1 of Table 2.2, so I do not extend their discussion further in this section. However, several interesting results stand out from the triple interaction terms. I provide a detail discussion below.

Table 2.6: Relationship between non-economic factors and well-being of self-employed women and men across countries, 2005-2014

	(1) Self-Perception	(2) Education	(3) Tradition	(4) Children
Female	0.079***	0.139***	0.105***	0.125***
	(0.00)	(0.00)	(0.00)	(0.00)
Female* self-employed	-0.056	-0.202***	-0.013	0.019
	(0.22)	(0.00)	(0.80)	(0.78)
self-employed	0.011	0.148***	0.076*	0.013
	(0.74)	(0.00)	(0.09)	(0.80)
Non-Economic factors (NE)	-0.071***	0.164***	0.217***	-0.003
	(0.00)	(0.00)	(0.00)	(0.90)
NE * Female	0.097***	-0.027	0.022	0.006
	(0.01)	(0.40)	(0.50)	(0.82)
NE * Self-employed	0.125**	-0.178***	-0.001	0.068
	(0.03)	(0.00)	(0.93)	(0.23)
NE * Female * Self-employed	-0.121**	0.191***	-0.177**	-0.163**
	(0.05)	(0.01)	(0.01)	(0.05)
Other control Variables	Y	Y	Y	Y
Constant	6.450***	6.544***	6.324***	6.347***
	(0.00)	(0.00)	(0.00)	(0.00)
Observations	140813	151688	143508	151688
R-squared	0.19	0.20	0.20	0.20

Notes: All regressions include country-year fixed effects. Standard errors are clustered by country and year. P-value in parentheses. ** Significant at 5 percent level. * Significant at 10 percent level.

In Table 2.6, column 1 adds a dummy for self-confidence to run a business to the regression. Results show that the coefficient of triple interaction is negative and statistically significant. Self-employed females who believe men can make better business owners suffer a substantial loss in well-being. The well-being gap is lower by 0.12 points, statistically significant at the 5% level. In other words, female entrepreneurs who are less confident about their ability to run a business have lower-wellbeing than male entrepreneurs. Column 2 adds an education dummy

as one of the non-economic factors to the regression. Results indicate that better-educated self-employed females are happier than educated males. The results imply that education confers some advantage on the well-being of self-employed women than men. The results provide compelling evidence on the importance of education to increase the well-being of self-employed females.

Column 3 adds the tradition dummy to the regression. Results reveal that self-employed women who are constrained by the stricter family traditions and social norms are less happy than self-employed men. The magnitude of the well-being gap is 0.17 points (significant at the 5 % level), which is about 7.4% of one standard deviation on well-being measure. The results support my earlier discussion that most traditional and social norms, especially in developing countries, are the primary obstacles for women entrepreneurs, and this deters women more than men from participating in entrepreneurial activities. In column 4, I add a child dummy. The coefficient of triple interaction is negative and statistically significant at the 5% level. The results show that self-employed women with children suffer a greater loss in well-being than men entrepreneurs. The negative effect of having children on the well-being of self-employed women is about 0.17 points stronger than self-employed men.

Table 2.7: Relationship between non-economic factor and well-being of self-employed women and men in rural and urban areas, 2005-2014

	Self-perception		Education		Tradition		Children	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Female	0.074**	0.090**	0.084**	0.132**	0.097***	0.104***	0.112***	0.090*
	(0.013)	(0.014)	(0.036)	(0.017)	(0.001)	(0.003)	(0.007)	(0.061)
Female*SE	-0.068	-0.11*	-0.137	-0.216***	-0.088	-0.023	0.123	-0.002
	(0.38)	(0.06)	(0.23)	(0.00)	(0.33)	(0.77)	(0.31)	(0.98)
NE	-0.075**	-0.075**	0.123***	0.161***	0.181***	0.243***	-0.014	0.004
	(0.03)	(0.04)	(0.00)	(0.00)	(0.00)	(0.00)	(0.78)	(0.92)
NE*Female	0.072*	0.108*	0.021	-0.007	0.012	0.038	-0.014	0.064
	(0.08)	(0.06)	(0.66)	(0.89)	(0.80)	(0.38)	(0.77)	(0.10)
NE*SE	0.126	0.121	-0.134*	-0.168***	-0.109	-0.039	0.139*	0.085
	(0.13)	(0.13)	(0.09)	(0.01)	(0.23)	(0.60)	(0.07)	(0.36)
NE*Female*SE	0.009	-0.108	0.085	0.149*	-0.024	-0.201*	-0.283*	-0.192
	(0.94)	(0.21)	(0.57)	(0.09)	(0.84)	(0.06)	(0.07)	(0.15)
Self-employed	-0.041	0.056	0.086	0.191***	0.084	0.145**	-0.080	0.056
	(0.50)	(0.15)	(0.10)	(0.01)	(0.19)	(0.03)	(0.23)	(0.51)
Other controls	Y	Y	Y	Y	Y	Y	Y	Y
Observations	46849	59716	48706	62779	47429	60605	48706	62779
R-squared	0.21	0.20	0.21	0.21	0.21	0.21	0.21	0.21

Notes: All regressions include country-year fixed effects. Standard errors are clustered by country and year.
P-value in parentheses. ** Significant at 5 percent level. * Significant at 10 percent level. SE is self-employed; NE is non-economic factors.

Table 2.7 reproduce the regression reported in columns 1- 4 of Table 2.6 on two samples: rural and urban. My main focus in on the triple interaction of female, non-economic factors, and self-employed. The results suggest that a lack of confidence to run a business have detrimental influences on the well-being of female entrepreneurs than male entrepreneurs in rural areas. However, the results are not statistically significant. Interesting, educated female entrepreneurs experience higher well-being than educated male entrepreneurs in rural areas. The magnitude of the well-being gap is 0.15, which is statistically significant at the 10% level. However, the result is not statistically significant for urban samples. It implies that in rural areas, better-educated self-employed women are happier than self-employed men.

The results suggest that in both urban and rural areas, stricter adherence to traditions and social norms have a negative influence on the well-being of female than male entrepreneurs. However, the results are statistically significant for rural samples. The magnitude of the well-being gap is -0.201, statistically significant at the 10% level. The difference in well-being can be due to, as discussed earlier, the stricter traditions and unfair social discrimination towards women, especially in rural areas. The previous literature argues that women, especially in developing countries, are more deem to follow the traditions than men (see, for example, Carranza et al., 2018; Shepherd et al., 2019). Consistent with this argument, my results suggest that female entrepreneurs in rural areas, who are bound by these traditions and social norms are less happy than male entrepreneurs.

Finally, my results find that the presence of young children has a negative influence on the relative well-being of women entrepreneurs in both urban and rural areas. Interestingly, I find that self-employed women, as compared to self-employed men, with children, suffer a greater loss in well-being in urban areas. The magnitude of the well-being gap in the urban area is -0.283 points, statistically significant at the10% level. The negative well-being gap in the urban area can be because female entrepreneurs experience more stress of juggling work-family responsibilities, including taking care of their young children than male entrepreneurs.

2.6 Limitation of the study

Inevitably, my study has limitations that can represent a useful starting point for future research. First, although WVS is the best dataset available to me, it is cross-sectional data, which implies that it is impossible to establish causality. The cross-sectional data are not enough to capture the issue of unobserved heterogeneity (Gevaert et al., 2018). Thus, the data used in this study cannot explore the causality; my analysis cannot provide any policy recommendation.

Second, although I included several non-economic factors, there are other non-economic factors identified by the earlier studies, such as risk tolerance, balancing work-family life, the importance of family, creativity, and independence, among others (see Carranza et al. (2018) for details). Furthermore, due to data limitation, I am unable to include any economic factors such as business profit, wealth, and size of the firm in my paper to study its effect on the well-being of self-employed females. I believe it is important to compare the association between non-economic and economic factors on the well-being of self-employed. Future research can include both sets of factors (economic and non-economic) and provide a comprehensive analysis by examining whether and how these diverse factors could possibly influence the relationship between self-employment and well-being.

Another concern is that I use subjective measures of non-economic determinants. This is problematic because individuals may evaluate objectively similar situations in different ways (Hessels et al., 2017). For instance, people with different goals and objectives in life may respond differently to the subjective questions on non-economic variables. However, I have done my best to include controls (including income, education, age, and marital status) to alleviate the difference in individuals' characteristics. Nevertheless, future research may benefit from the use of more objective measures for non-economic and economic variables and compare the results with this study.

2.7 Conclusion

My study focuses on two main objectives. My first goal is to investigate how self-employment status correlates with the well-being in a wide cross-section of countries and examine the difference in this relationship across gender. My second goal is to examine the influence of various

non-economic factors on the relative well-being of female and male entrepreneurs. To attain these objectives, I use the cross-sectional individual-level data from the World Value Survey across 80 countries. One major contribution of my study is that it provides insight into the association between well-being and self-employment with a distinct focus on gender. Such a gender gap in the well-being of self-employed proved to be important, as self-employed women are less happy than self-employed men, especially in low- and middle-income countries. My findings suggest that female entrepreneurs experience lowers well-being than male entrepreneurs in rural areas, especially in developing countries. The results indicate that various non-economic factors influence the relative difference in the well-being of self-employed females and males. For example, I find that non-economic factors, like lack of self-confidence to run a business, stricter adherence to social norms, and the presence of young children lowers the well-being of self-employed women more than self-employed men. My results also suggest that that better-educated self-employed women are happier than self-employed men across countries. Results show that stricter adherence to social norms has detrimental influences on the well-being of self-employed females than self-employed males in rural areas.

Chapter 3

Business Environment and Happiness of Entrepreneurs[64]

3.1 Introduction

Historically, the economic development of an economy has been measured using traditional monetary-oriented indicators such as Gross Domestic Product (GDP) per capita. Since the introduction of the new development concept of "Gross National Happiness" (GNH) by the Kingdom of Bhutan, many researchers and scholars have argued in favor of new social indicators of development Angner (2010). Stiglitz, Sen and Fitoussi (2009) suggest, "The time is ripe for our measurement system to shift emphasis from measuring economic production to measuring people's well-being." A growing body of research began to provide new evidence on the economics of happiness.

Recently, the relationship between happiness and entrepreneurship has started to attract attention from various researchers. For example, Acs and Szerb (2009) compare the happiness score of a country from the Gallup 2005 World Pool with countries' position on Global Entrepreneurship Index and find a strong relationship between entrepreneurship and happiness. Gries and Naude (2011) provide evidence that entrepreneurs are important for individual and society development beyond the measurement of GDP. Nude et al. (2014) conclude that entrepreneurs contribute to a nation's happiness. According to the Global Entrepreneurship Monitor (GEM) Report 2013, entrepreneurs are among the happiest individual in terms of their subjective well-being and working conditions. However, one of the policy-relevant relationships that have received less attention in the literature is the one between the well-being of entrepreneurs and the business environment. The institutional, legal, and regulatory environment in which entrepreneurs operate will likely affect their happiness level more than the happiness level of non-

[64] This essay is a result of collaboration with Inessa Love.

entrepreneurs, who are less influenced by such an environment. However, the existing literature doesn't provide any clear evidence on this link. Therefore, the goal of this paper is to provide new evidence on the impact of the business environment on the relative happiness of entrepreneurs.

There is ample evidence that suggests that the efficiency of the business environment is important for economic activity. An economy that ranks high on doing business indicators performs well in other indicators of development (Doing Business Report, 2016). The ease of doing business indicators capture various aspects of the business environment.[65] For example, specific indicators capture the ease of starting a new business, the ease of getting credit, the ease of hiring and firing workers, and the ease of closing the business (i.e., bankruptcy laws), all of which are likely to have an important effect on entrepreneurs.[66] The goal of this paper is to study the impact of the business environment on the *relative* happiness of entrepreneurs and non-entrepreneurs.

A priori is not obvious what should be the effect of the business environment on the happiness of entrepreneurs[67]. Various authors showed that entrepreneurs enjoy a higher level of life satisfaction than employees because the former value independence, lifestyle flexibility of operation own business, and autonomy in decision making.[68] A pleasant business environment is characterized by better institutions, more efficient and less burdensome regulations, and higher quality legal protection. Clearly, such an environment makes it easier to conduct business and allow entrepreneurs to gain the most benefit from their self-employment choice in terms of their happiness levels. Thus, entrepreneurs might be significantly happier than non-entrepreneurs in a better business environment. This will lead to a positive impact of the business environment on

[65] Includes 10 areas of business regulations – Starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing the contract and resolving insolvency (Doing Business Report 2016).
http://www.doingbusiness.org/~/media/WBG/DoingBusiness/Documents/Annual-Reports/English/DB17-Chapters/DB17-About-Doing-Business.pdf.

[66] The World Bank ranks economies on their ease of doing business from 1-189; with first place (higher rank or lower number) means the regulatory environment is more conducive to the starting and operation of a local firm (Doing Business Report 2016).

[67] In this paper, "happiness," "life satisfaction," and "well-being" are used interchangeably, consistent with some of the previous literature. Refer World Happiness Report (2013), Howell and Howell (2008), Naude et al. (2014), and Angner (2010) for further discussion.

[68] Benz and Frey, 2004; Lange, 2012; Taylor, 2004; Andresson, 2008; Benxe and Frey, 2008; Blanchflower, 2004. Frey, 2010.

the relative happiness of entrepreneurs. In addition, the reasons for entering into entrepreneurship are likely to be different across countries. For example, in low-income countries with few wage-earning opportunities, many poor people enter into entrepreneurship out of necessity rather than out of the pursuit of independence, flexibility, and autonomy. Such "necessity entrepreneurs" may be less happy than wageworkers, as some anecdotal evidence demonstrates (e.g., Banerjee and Duflo, 2011). On the other side, a better business environment may lead to more new business entry, which may increase competition among small businesses and may adversely affect the average happiness of entrepreneurs in the long run[69]. For example, in Denmark, where business ownership is relatively low, the job satisfaction score of entrepreneurs is relatively high (Naude et al. 2014). Higher competition might lead to a negative impact on the relative happiness of entrepreneurs. Thus, a priori is not clear whether the business environment increases or decreases the happiness of entrepreneurs. This paper seeks to fill this gap and provide new empirical evidence to shed light on this important topic.

In this paper, we combine the data on the business environment and other country characteristics from the World Bank and data on life satisfaction from the Gallup World Poll to explore the relationship between the business environment and happiness of entrepreneurs. Gallup collects data on life satisfaction using Cantril's Self-Anchoring Scale[70], which has the respondent rate his or her current life on a ladder scale in which 0 is "the worst the worst possible life for you" and 10 is "the best possible life for you." We have a panel of 128 countries over five years (2011-2015). While our data is only available on the aggregate level, we are able to calculate the average life satisfaction of business owners and non-owners in each country and year.[71] Note that Gallup

[69] The distribution of the percentage of business owners across countries with the poor and good business environment is illustrated in Appendix C Figure C.1.

[70] The Cantril's Self-Anchoring Scale, developed by pioneering social researcher Dr. Hadley Cantril, consists of the following question: *"Please imagine a ladder with steps numbered from zero at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time? (ladder- present)."* https://news.gallup.com/poll/122453/understanding-gallup-uses-cantril-scale.aspx.

[71] Gallup uses the following question to collect the well-being data from business-owners: *"Please tell me whether each of the following applies to you, or not. Are you self-employed or make money or barter by working for yourself by doing domestic work, farm work, odd jobs*, *or working for your own business?"* (asked only of those without a paid, full-time job): http://www.fao.org/fileadmin/templates/ess/voh/Gallup_world_poll_methodology.pdf. In this paper, we assume all those without paid, full-time job as a business owner. We use the terms self-employed, business owners, and entrepreneurs interchangeably. However, there can be heterogeneity among entrepreneurs, i.e., some entrepreneurs may not be a true business owner. Unfortunately, the data available to use is at the country level, so we cannot distinguish the specific characteristic of individuals in the survey. Thus, we assume that those individuals

doesn't provide data on individual entrepreneurs, so it is difficult to identify the specific characteristics of entrepreneurs. However, data is available at the aggregate level, which allows us to study how life satisfaction of owners is different from the life satisfaction of non-owners and how these relative differences are affected by various country features. We do this by focusing on the interaction of ownership and various country features in explaining the level of life satisfaction.

Our findings can be summarized as follows: First, we find that the life satisfaction of owners is higher than the life satisfaction of non-owners in all groups of countries (i.e., low, medium-and high-income). However, the difference in happiness between owners and non-owners is more substantial in higher-income countries than they are in the middle- and lower-income countries. Specifically, the difference in life satisfaction of owners and non-owners in low-income countries is about 10% of one standard deviation, and 35% of one standard deviation, which is a substantial difference.

Second, we explore which country features are most responsible for this difference. Specifically, we explore the quality of the business environment, percent of the business owners in a country, the level of corruption, unemployment, and financial development. We find that the most significant and robust determinant of the differences in the life satisfaction of owners and non-owners is the quality of the business environment. This relationship is robust to controlling for the impact of the overall level of development, corruption, unemployment, and access to finance.

Third, we explore a relationship between unemployment and the relative happiness of entrepreneurs. Previous research showed that higher unemployment reduces happiness (Stuzer and Frey, 2010). Unemployment may have two opposing impacts on the relative happiness of business owners vs. non-owners. On one side, having a business may add stability and certainty for business

(without paid, full-time job) as a true business owner. Furthermore, for the purposes of this paper, we consider business owners as those who own their own business (small and medium business), as defined in Doing Business Report 2015 (the World Bank).

owners because they are less dependent on others for income and are less at risk for layoffs. Thus, business owners may be relatively happier (or less unhappy) when unemployment is high. On the other side, when unemployment is high, more people will enter self-employment due to the lack of job opportunities, i.e., become necessity entrepreneurs, who could possibly be less happy than those with jobs. Therefore, high unemployment may increase the proportion of necessity entrepreneurs and thus reduce the average happiness of entrepreneurs. Thus, the relationship between unemployment and the relative happiness of entrepreneurs is ambiguous.

We find that the level of unemployment has a strong positive impact on the relative life satisfaction of business owners. Thus, in an environment with high unemployment, the happiness gap between owners and non-owners is larger. The results point out that the benefit of extra stability and certainty provided by self-employment becomes more pronounced in the environment with high unemployment. Interestingly, unemployment and quality of the business environment provide strong and independent influence on the life satisfaction of business owners (i.e., both coefficients remain similar in magnitude and statistically significant when included together as they are alone). Our findings suggest that two different and independent mechanisms influence the relative happiness of owners: one operates via a better business environment, which makes running a business easier, and another one operates through providing certainty and stability in the environment with high unemployment. These results shed new light on the reasons for the higher life satisfaction of business owners.

This study contributes to the literature in three important ways. First, this study is a first attempt to explore the role of the business environment in the happiness of entrepreneurs. Second, the new evidence may contribute to the understanding of determinants of happiness for the entrepreneurs and non-entrepreneurs. Third, many countries are interested in promoting business activities amongst its working populations. Thus, our focus on happiness and business environment may be rewarding from the scientific, economic, societal, and policy-making perspectives.

3.2 Data

We extract data on Life Evaluation Index (LEI) at the country level from the Gallup World Poll

(GWP). The Gallup's World Poll surveys residents in more than 160 countries, representing more than 99% of the world's population aged 15 and older, using randomly selected nationally representative samples. The Gallup survey includes at least 1,000 surveys of individuals randomly selected in each country and year. We use data on LEI from over 128 countries for five consecutive years (i.e., from the year 2011 to 2015). Many researchers (Nude et al. 2014, Howell and Howell 2008, Seligman 2002, and World Happiness Report) use LEI as a measure of happiness. According to the World Happiness Report 2016, happiness, as measured by the LEI provides a broader indication of human welfare than do measures of income, poverty, health, education and good governance, since it captures the overall quality of life as a whole. Deaton (2008) provides strong evidence to explain why the Gallup World Pool data best describes the Life Evaluation Index and is suitable to make a cross-country comparison in life satisfaction. Some of Deaton's arguments are that the GWP survey uses the same questionnaires in all countries; it provides national samples of many countries with equal distribution of rich, middle, and poor countries[72]. Consistent with the previous researcher, we define an entrepreneur as a person who is self-employed (Naude et al. 2014, and van der Loss et al. 2010). We use 'ease of doing business index' from the World Bank annual report 2016 on doing business, as a proxy to determine the business environment of a country. Specifically, we use DTF, which is the distance to frontier measure produced by the World Bank. The higher values of DTF indicate a better business environment. We use a number of other control variables from various sources. Specifically, we use the level of corruption[73], unemployment, GNI per capita, and access to credit. These variables are described in Appendix C Table C.1.

Table 3.1A: Summary Statistics, 2011-2015

Variable	Obs.	Mean	Std. Dev	Min	Max
LS	1280	5.76	0.92	3.83	7.82
per_O	1280	0.14	0.09	0.01	0.48
DTF	1208	60.91	12.54	27.51	91.24
logGni	1208	8.62	1.47	5.39	11.41
Unemployment	1208	8.85	6.15	0.20	31.40
Lack of Corruption	1056	42.69	19.22	8.00	94.00
Credit	1228	52.11	44.89	0.92	261.48

Notes: Table 3.1A provides the summary statistics of the dependent and independent variables used in the study.

[72] For further discussion, refer to Deaton (2008), and Leign and Wolfers (2006). For detail on Gallup World Poll, see http://www.gallupworldpoll.com/content/24046/About.aspx.
[73] Corruption is indicated on the scale of 0 (highly corrupt) and 100 (very clean).

Table 3.1A reports the descriptive statistics for the main variables used in the analysis. The average level of happiness is 5.76, with a standard deviation of 0.93. The average level of business environment is 60.91, with a standard deviation of 12.54. Note that the higher the DTF score of a country better the environment for doing business[74]. Table 3.1B shows a correlation matrix. As expected, DTF is positively correlated with the life satisfaction of business owners. A positive correlation with GNI indicates that business owners in a country with higher GNI per capita are happier. Note that unemployment and percentage of ownership have a negative correlation with life satisfaction of business owners as expected.

Table 3.1B: Correlations between variables, 2011-2015

	LS	per_O	DTF	logGni	Unemployment	Corruption	Credit
LS	1.000						
per_O	-0.188	1.000					
DTF	0.556	-0.352	1.000				
logGni	0.699	-0.416	0.786	1.000			
Unemployment	-0.131	-0.268	0.027	0.080	1.000		
Lack of Corruption	0.614	-0.284	0.805	0.786	-0.028	1.000	
Credit	0.368	-0.275	0.627	0.627	0.064	0.598	1.000

3.3 Empirical methodology

The Gallup data available to us is aggregated for each country. However, because Gallup also provides the breakdown of life satisfaction for various categories of the sample groups, we are able to calculate the average life satisfaction of business owners and the average life satisfaction of non-owners for each country and year. Thus, we have two data points for each country and year. Our dependent variable is the average life satisfaction, LS, and we use the ownership status, O, as the control. The first model for chapter 3 is given by:

$$LS_{ito} = \beta_0 + \beta_1 O_{ito} + \beta_2 per\_O_{it} + \beta_3 logGni_{it} + \delta_{it} + e_{ito} \quad (3.1)$$

Where i denotes countries, t denotes years, δ is a set of time fixed effects, and e is the error term, o denotes the ownership status to indicate that we have two different ownership status for each

[74] An economy's distance to frontier score is indicated on a scale from 0 to 100, where 0 represents the worst performance and 100 the frontier (Doing Business report, 2017).

country and year combinations, and O denotes the ownership dummy, which takes the value 1 for the business owners category and 0 otherwise. We use two controls in model 3.1: per_O is the percent of business owners in the country, calculated as the percent of business owners in the Gallup random sample, and logGNI is the log of GNI per capita. The country-time fixed effects capture all common factors, such as macroeconomic shocks and the global financial crisis affecting all countries in a year. Note that the time fixed effects are included in all regressions, but not reported in the tables.

We run the model 3.1 on the full sample and also split our sample into 3 subsamples based on the country level of development: low, medium, and high level, based on the World Bank classification. Because we have two data points for each country-year, we cluster standard errors by country-time combination to allow for the two country-year observations to be correlated within country and year. The focus of model 3.1 is on coefficient $\beta_{1,}$ which show whether business owners are happier than non-owners in our sample of countries.

Before we proceed to the next section, it is important to clarify that our study does not aim to establish the causality of the relationship between entrepreneurship and happiness. For example, entrepreneurs may be happier than wage workers because their self-employment choice allows them more independence, freedom, and flexibility. This would imply that causality runs from entrepreneurship to happiness, i.e., the 'direct causality.' On the other side, happier people are generally more creative and enthusiastic and may be more likely to choose to become an entrepreneur. These arguments imply that causality runs from happiness to entrepreneurship, the "reverse causality." Finally, the surveys are likely to oversample the successful entrepreneurs, and this selection bias will also create a positive correlation between happiness and entrepreneurship. Thus, it is not obvious whether the choice to enter into entrepreneurship causes higher happiness or if higher happiness makes people more likely to enter entrepreneurship. While establishing such causal nature is important, it is beyond the scope of this paper because we lack adequate data to identify such causality credibly. Nevertheless, we believe that given our data structure, we can adequately answer another equally important question: Does the business environment affects entrepreneurs *relatively* more than non-entrepreneurs. Note that the causality here is different because the individual choice to become an entrepreneur is unlikely to have an effect on the

business environment. In other words, we assume that the business environment is exogenously determined (by the institutional, political, and legal environment in the country) and is not affected by the individual choices of people to become entrepreneurs or not. Therefore, we can credibly establish whether the business environment affects entrepreneurs *relatively* more than non-entrepreneurs. In other words, our main focus is on the interaction between country-level business environment and country-level entrepreneurship status, as discussed in more detail in our next model.

Thus, in our next model, our focus is on the interaction of the ownership dummy (O) and doing business environment, DTF.[75] The coefficient on the interaction term (O*DTF) is expected to capture the differential effect of the business environment on the life satisfaction of entrepreneurs. The regression equation for the model two is:

$$LS_{ito} = \beta_0 + \beta_1 O_{ito} + \beta_2\, DTF_{it} + \beta_3\, (O_{ito} * DTF_{it}) + \beta_4\, C_{it} + \delta_{it} + e_{ito} \quad (3.2)$$

Where LS is average life satisfaction (happiness) score, O denotes ownerships dummy, i denotes countries, t denotes time (years), δ is a set of country-time fixed effects, and e is the error term. DTF is the distance to the frontier index (a proxy of the business environment); (O * DTF) denotes the interaction between ownership dummy and doing business indicators, and C denotes the vector of control variables discussed below. The main focus in model 3.2 is on the coefficient β_3, which captures the differential effect of the business environment on the happiness of entrepreneurs (i.e., business owners).

Our control variables include log of GNI per capita, unemployment, corruption, percentage of business ownership in a country, access to credit (level of financial development).[76] We choose a set of control variables that intuitively may have a differential effect on entrepreneurs and non-entrepreneurs.

[75]Studying the individual components will shed light on our second question, i.e., which specific features of the business environment matter more for the happiness of entrepreneurs.

[76] We also included inflation as one of the determinants and found it to be not significant and have no material impact on any other results. Also, we included Gini coefficient as a measure of inequality. Our main results are not affected by its inclusion. We chose not to include the Gini coefficient because it is missing for a significant number of countries and years.

Unemployment is an important determinant of overall happiness levels and also an important factor in choosing self-employment. For instance, Stuzer and Frey (2010) show that higher unemployment reduces happiness. This effect is obvious for those actually unemployed. However, those who are not personally unemployed also report reduced happiness in situations with high unemployment, likely due to increased anxiety and uncertainty of their own job situation. Unemployment may have two opposing impacts on the relative happiness of business owners vs. non-owners. On one side, having your own business may add stability and certainty for business owners because they are less dependent on others for income. This could be an extra bonus in an environment with high unemployment and make business owners relatively happier when unemployment is high. On the other side, when unemployment is high, more people will enter self-employment due to the lack of job opportunities, i.e., become necessity entrepreneurs, which could possibly be less happy than those with jobs. Thus, unemployment may reduce the average happiness of entrepreneurs.

Corruption is another factor that may differentially affect the happiness of business owners. The most likely impact is that reduction in corruption will make running a business easier and hence affect entrepreneurs more than non-entrepreneurs. Also, we control for the percentage of entrepreneurs (ownerships) in a country to capture the prevalence of entrepreneurs. We expect that an increase in the number of entrepreneurs will increase the difference in life satisfaction. Finally, access to credit is an important factor in operating a small business. Thus, the level of financial development in a country may have a differential effect on the happiness of entrepreneurs.

We have two goals in using our control variables: first, to test the robustness of the main effect, which we expect to be the effect of the business environment, DTF, on the relative happiness of business owners. And second, to see what other country features have a differential impact on the relative happiness of business owners. To do this, we include interactions of each of our control variables with Ownership dummy.

3.4 Results

Table 3.2 explores the relationship between business ownership and life satisfaction in the whole sample and sub-samples of countries with different levels of income. The result from our model 3.1 shows that in the whole sample, business owners are happier than non-owners. The coefficient of about 0.22 is about 24% of one standard deviation on the LS measure. Columns 2-4 in Table 3.2 splits the sample into three sets of countries by the levels of development: low-middle, high-income countries. Results show that the relative life satisfaction of business owners increases with the increase in GNI per capita. In other words, the life satisfaction of business owners in developed countries is higher than in developing countries. Specifically, the difference in life satisfaction of owners and non-owners in low-income countries is about 10% of one standard deviation, and in high-income countries, it is about 35% of one standard deviation, which is a substantial difference. Thus, we find that the impact of ownership on the life satisfaction of business owners varies in countries with different income levels.

Table 3.2: Relationship between ownership and income level across countries with different levels of economic development, 2011-2015

	All sample	low-income	Middle-income	High-income
Ownership	0.217***	0.107***	0.250***	0.328***
	(15.52)	(6.54)	(8.34)	(12.28)
per_O	1.288***	0.366	1.619**	4.033***
	(3.95)	(1.10)	(2.05)	(4.77)
logGni	0.479***	0.355***	0.902***	0.783***
	(28.1)	(7.41)	(5.92)	(10.97)
Constant	1.283***	2.412***	-2.482*	-2.212***
	(6.87)	(6.81)	(-1.81)	(-3.09)
Obs.	1280	522	340	418
R-squared	0.522	0.167	0.182	0.457

Notes: The dependent variable is average life satisfaction. All regressions include country-year fixed effects. Errors are clustered on the country year. T-statistics are in parenthesis. ** Significant at 5 percent level. * Significant at 10 percent level.

There are many reasons why business owners will be relatively happier in higher-income countries. As we discussed in the introduction, it could be because of the different reasons they choose to become business owners or because of the benefits provided by being a business owner. As represented in Table 3.1B, many country characteristics, such as unemployment, corruption, access to credit, and the quality of the business environment, are correlated with each other. Therefore, it is important to disentangle and isolate the features that have a high impact on the life

satisfaction of business owners. Our subsequent results investigate what specific features of high-income countries have the most impact on the relative life satisfaction of business owners.

Table 3.3. The impact of the business environment on the relative life satisfaction of business owners across countries, 2011-2015

	(1) LS	(2) LS	(3) LS	(4) LS	(5) LS
Ownership	0.217***	-0.191***	-0.191***	-0.191***	-0.144**
	(15.53)	(-3.47)	(-3.47)	(-3.47)	(-2.50)
DTF	0.041***	0.038***	-0.0025	0.0005	-0.0048
	(17.83)	(15.92)	(-0.72)	(0.15)	(-1.19)
O*DTF		0.0066***	0.0066***	0.0066***	0.0056***
		(7.18)	(7.18)	(7.18)	(6.10)
logGni			0.440***	0.428***	0.451***
			(15.66)	(12.44)	(12.87)
Per_O					0.808**
					(2.15)
Unemployment					-0.024***
					(-4.59)
Lack of Corruption					0.0085***
					(3.64)
Credit					-0.0027***
					(-3.79)
Constant	3.100***	3.304***	1.975***	1.852***	1.877***
	(20.14)	(21.00)	(14.27)	(6.72)	(7.98)
Observations	1280	1280	1280	1280	1056
R-squared	0.328	0.33	0.511	0.574	0.562

Notes: The dependent variable is average life satisfaction. All regressions include country-year fixed effects. Column 4 adds regional dummies. Errors are clustered on the country year. T-statistics are in parenthesis. ** Significant at 5 percent level. * Significant at 10 percent level.

Table 3.3 shows the result for our model 3.2, which includes the interaction terms between DTF and ownership dummy (O*DTF). The coefficient for O*DTF interaction in column 2 is positive and statistically significant, with a t-statistic of over 7. The results indicate that the DTF has a strong and positive impact on the relative life satisfaction of business owners. The magnitude of the estimated coefficients implies that at the minimum level of DTF in our sample, which is equal to 27.5 (as given in Table 3.1A), there is basically no difference between life satisfaction of owners and non-owners, while at the highest level of DTF in our sample, which equals to 91.2, the relative difference between life satisfaction of owners and non-owners equals 0.4, which is 44% of one standard deviation of LS. This result is in line with sample split results reported in Table 3.2. In columns 3-5 in Table 3.3, we conducted several robustness checks: column 3 adds log GNI per capital, column 4 adds regional dummies (not reported), and column 5 adds other country-year control variables. The interaction of O*DTF remains significant, and the magnitude is nearly

unaffected. For our subsequent investigation, we use the regression in column 5 as our main focus, because it has the most controls. Notably, our regressions result has an R-squared coefficient of 0.56, which is very high for cross-country regression like this one.

Table 3.4: The impact of other country characteristics on the relative life satisfaction of business owners across countries, 2011-2015

	(1) LS	(2) LS	(3) LS	(4) LS	(5) LS
Ownership	-0.144** (-2.50)	-0.219*** (-3.26)	0.095*** (3.10)	0.099*** (4.07)	0.194*** (9.38)
Per_O	0.808** (2.15)	0.808** (2.15)	0.808** (2.15)	0.808** (2.15)	0.808** (2.15)
DTF	-0.0048 (-1.19)	-0.0019 (-0.48)	-0.0019 (-0.48)	-0.0019 (-0.48	-0.0019 (-0.48)
O*DTF	0.0058*** (6.10)				
O*logGni		0.049*** (6.26)			
O*Corruption			0.0027*** (4.50)		
O*unemployment				0.014*** (4.71)	
O*credit					0.0004 (1.40)
logGni	0.451*** (12.87)	0.426*** (12.26)	0.451*** (12.87)	0.451*** (12.87)	0.451*** (12.87)
Unemployment	-0.024*** (-4.59)	-0.024*** (-4.59)	-0.024*** (-4.59)	-0.031*** (-5.84)	-0.024*** (3.64)
Lack of Corruption	0.009*** (3.64)	0.009*** (3.64)	0.007*** (3.05)	0.009*** (3.64)	0.009*** (3.64)
Credit	-0.0027*** (-3.79)	-0.0027*** (-3.79)	-0.0027*** (-3.79)	-0.0027*** (-3.79)	-0.0028*** (-4.02)
Constant	1.877*** (7.98)	1.914*** (8.25	1.757*** (7.49)	1.755*** (7.48)	1.708*** (7.27)
Observations	1056	1056	1056	1056	1056
R-squared	0.562	0.562	0.561	0.562	0.560

Notes: The dependent variable is average life satisfaction. All regressions include country-year fixed effects. Errors are clustered on the country year. T-statistics are in parenthesis. ** Significant at 5 percent level. * Significant at 10 percent level.

Because different country characteristics are correlated with each other, the impact of the business environment may be capturing other country-specific features that could also drive the difference between life satisfaction of owners and non-owners. Table 3.4 presents the results of interaction ownership with other country characteristics. We find that the estimated coefficients are significant for all interaction variables but access to credit. This finding is not surprising since high-income countries, in general, have lower corruption, better business environment, and lower unemployment, and thus all the impacts point in the same direction.

The real test of the robustness of the business environment results is presented in Table 3.5. Here we add the interaction of ownership and business environment along with other interactions. Thus, we test which of the variables have the most robust impact on the relative difference in life satisfaction of business owners. The main result from the Table 3.5 is that the interaction of ownership and DTF remains significant in all the regressions. The results affirm that the business environment is an important factor in determining the relative life satisfaction of business owners.

Several interesting results stand out from the Table 3.5. First, we notice that when the interaction of ownership and log GNI per capita is included in the regression, both interactions (O*DTF and O*logGNI) are less statistically significant with reduced magnitudes relative to when they are included on their own. The results suggest that the overall level of development measured by logGNI and the quality of business environment measured by DTF seem to capture some of the similar aspects that drive the relative difference in the life satisfaction of owners and non-owners. This could be because our measure of business environment is a noisy and incomplete measure of the quality of business environment (and therefore the overall level of development could be a better proxy for the quality of business environment), or because other features of more developed countries are important for business owners. Nevertheless, a reassuring result is that DTF interaction remains significant, albeit at only a 10% level when logGNI interaction is included. Second, column 3 shows that corruption interacted with ownership is no longer significant when interaction with DTF is included. This could be because the level of corruption is well represented by the overall quality of the business environment captured in the DTF measures. Third, column 4 shows that unemployment interaction with ownership is strongly significant when DTF interaction is included. Interestingly, the magnitude and significance of these two interactions (ownership with DTF and with unemployment) are not very affected when both are included, relative to when they are included one at a time (in Table 3.4). Thus, unemployment and the quality of the business environment provide an independent influence on the life satisfaction of business owners. Our findings suggest that there are two different and independent mechanisms that influence the relative happiness of owners: one operates via better business environment that makes running a business easier, and another one operates through providing certainty and stability

in an environment with high unemployment. These results shed new light on the reasons for the higher life satisfaction of business owners.

Table 3.5: Robustness check on the impact of business environment on the relative happiness of business owners across countries, 2011- 2015

	(1) LS	(2) LS	(3) LS	(4) LS	(5) LS
Ownership	-0.144** (-2.50)	-0.228*** (-3.40)	-0.169** (-2.42)	-0.245*** (-4.06)	-0.236*** (-3.45)
Per_O	0.808** (2.15)	0.808** (2.15)	0.808** (2.15)	0.808** (2.15)	0.808** (2.15)
DTF	-0.005 (-1.19)	-0.004 (-0.87)	-0.005 (-1.28)	-0.005 (-1.17)	-0.006 (-1.49)
O*DTF	0.006*** (6.10)	0.003* (1.96)	0.007*** (3.79)	0.006*** (6.02)	0.008*** (6.18)
O*logGni		0.027* (1.91)			
O*Corruption			-0.007 (-0.63)		
O*unemployment				0.013*** (4.72)	
O*credit					-0.001*** (-3.17)
logGni	0.451*** (12.87)	0.438*** (12.45)	0.451*** (12.86)	0.451*** (12.86)	0.451*** (12.86)
Unemployment	-0.024*** (-4.59	-0.024*** (-4.59)	-0.024*** (-4.59)	-0.031*** (-5.87)	-0.024*** (-4.59)
Lack of Corruption	0.009*** (3.64)	0.009*** (3.64)	0.009*** (3.73)	0.009*** (3.64)	0.009*** (3.64)
Credit	-0.003*** (-3.79)	-0.003*** (-3.79)	-0.003*** (-3.79)	-0.003*** (-3.79)	-0.002*** (-3.05)
Constant	1.877*** (7.98)	1.919*** (8.25)	1.889*** (7.98)	1.927*** (8.18)	1.923*** (8.13)
Observations	1056	1056	1056	1056	1056
R-squared	0.56	0.56	0.56	0.56	0.56

Notes: The dependent variable is average life satisfaction. All regressions include country-year fixed effects. Errors are clustered on the country year. T-statistics are in parenthesis. ** Significant at 5 percent level. * Significant at 10 percent level.

3.5 Conclusion

In this paper, we show that a better business environment is associated with higher relative life satisfaction of business owners. Our results suggest that business owners enjoy more benefits of self-employment in countries where it is easier and more efficient to operate their business. Also, business owners are more satisfied with life in an environment with high unemployment, which suggests that they derive life satisfaction from the stability their self-employment provides in an

uncertain job environment. To the best of our knowledge, these results have not been demonstrated in the prior literature. Since we are not able to establish causality, our paper cannot make any policy recommendations. However, our results offer new insight into the nature of life satisfaction of business owners.

Appendix A

Appendix to Chapter 1

Table A.1. List of countries and years in WVS data, 1994 -2014

Country	W 3	W 4	W 5	W 6	Country	W 3	W 4	W 5	W 6
Albania	1998	2002			Macedonia	1998	2001		
Algeria		2002		2013	Malaysia	1996	2003	2006	2012
Andorra			2005		Mali			2007	
Argentina	1995	1999	2006	2013	Mexico	1996	2000	2005	2012
Armenia	1997			2011	Moldova	1996	2002	2007	
Australia	1995	2001	2005	2013	Montenegro	1996	2001		
Azerbaijan	1997			2011	Morocco	1997	2001	2007	2011
Bahrain				2014	Netherlands	1997	2002	2006	2012
Bangladesh	1996	2002			New Zealand	1998		2004	2011
Belarus	1997			2011	Nigeria	1995	2000		2011
Bosnia		2001			Norway	1996		2007	
Brazil			2006	2014	Palestine				2013
Bulgaria	1997		2005		Peru	1996	2001	2006	2011
Burkina Faso			2007		Philippines	1996	2001		2011
Canada		2000	2006		Poland	1997	2003	2005	2011
Chile	1996	2000	2006	2011	Puerto Rico	1995	2001		
China	1995	2001	2007	2012	Qatar				2010
Colombia	1997	2001	2005	2012	Romania	1998		2005	2012
Cyprus			2007	2011	Russia	1995		2006	2011
Czech Rep.	1998	2001			Rwanda			2007	2012
Dominican Rep.	1996				Saudi Arabia		2003		
Ecuador				2013	Serbia	1996	2001		
Egypt	1997	2001	2005	2013	Serbia Mont.			2005	
El Salvador	1999				Singapore		2002		2012
Estonia	1996			2011	Slovakia	1998			2011
Ethiopia			2007		Slovenia			2005	
Finland	1996		2005		South Africa	1996	2001	2006	2013
France		2002	2006		South Korea	1996	2001	2005	2010
Georgia	1996		2009	2014	Spain	1995	2000		2011
Germany	1997		2006	2013	Sweden	1996			2011
Ghana	1995	2001	2007	2012	Switzerland	1996			
Great Britain	1998		2005		Taiwan	1994	2002	2006	2012
Guatemala			2004		Tanzania		2001		
Hong Kong			2005	2013	Thailand			2007	2013
Hungary	1998	2000	2009	2012	Trin. Tobago			2007	2011
India	1995	2001	2006	2014	Tunisia				2013
Indonesia		2001	2006		Turkey	1996	2001	2007	2011
Iran		2000	2007		Uganda		2001		
Italy			2005		United States	1995	1996	2006	2011
Japan	1995	2000	2005	2010	Uruguay	1996	2001	2006	2011
Jordan			2007	2014	Uzbekistan				2011
Kazakhstan		2003		2011	Venezuela	1996	2000		
Kuwait	1996			2014	Viet Nam		2001	2006	
Kyrgyzstan				2011	Yemen				2011
Latvia					Zambia		2001	2007	

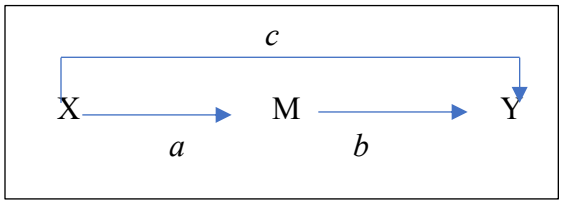
Table A.2. Description and sources for the dependent and independent variables use in chapter 1

Variable	Definition	Data Source/ Survey Questions
WB	Self-declared life-satisfaction level from 1 (not at all satisfied) to 10 (very satisfied)	(WVS): All things considered, how satisfied are you with your life as a whole these days? Using this card on which 1 means you are "completely dissatisfied" and 10 means you are "completely satisfied" where would you put your satisfaction with your life as a whole? (Code one number):
Age	Age of the respondent in year	Can you tell me your year of birth, please?
Age2	Square of AGE	Square of AGE (Age data from WVS)
Female	DV which takes the value 1 if the respondent is female, 0 otherwise	(WVS): Code respondent's sex by observation.
Education level	Categorical variable which takes value of 1,2,3 for elementary, secondary and university education levels, respectively.	(WVS): What is the highest educational level that you have attained?
Marital status	Categorical variable which takes value of 0,1 and 2 for other, married and single respectively. Other includes Divorced, Separated and Widowed.	(WVS): Are you currently (*read out and code one answer only).*
Employment Status	Categorical variable which takes value of 0,1,2 and 3 for other, employed, self-employed and unemployed respectively. Other includes Retired, Housewife, Students, and others.	(WVS): Are you employed now or not? (code pone answer*)*
No. of Children	Categorical variable which takes value of 0,1,2 and 3 for no-child, one-child, two-child, and three or more child respectively.	(WVS): Have you had any children? (code 0 if no, and respective number if yes).
Health Status	DV which takes the value 1 if the respondent has very good or good health status, 0 otherwise.	All in all, how would you describe your state of health these days? Would you say it is: (1) Very good, (2) Good, (3) Fair, (4) poor.
Income level	Categorical variable which takes value of 0,1 and 2 for low-middle-and high-income level respectively. Low includes first three lowest income group, middle includes the next three income group and high include the last four income group.	(WVS): We would like to know in what group your household is (1 indicates the lowest income group and 10 the highest income group in your country). Please, specify the appropriate number, counting all wages, salaries, pensions and other incomes that come in. (Code one number):

A.3: Econometric model to identify the indirect effect of education

The idea of estimating the indirect effect of education on well-being is similar to the standard approach used by most researchers to analyze "mediation." Mediation corresponds to the effect of an independent variable on a dependent variable as transmitted through a third variable, called a *mediator variable*.[77] (See Baron & Kenny (1986) and Judd & Kenny (1981) for details).

For example, if M is a mediator, X an independent variable and Y a dependent variable, then graphically mediation can be depicted in the following way:



Where path *a* and *b* are called direct effects. The mediational effect, in which X leads to Y through M, is called the *indirect effect*. The indirect effect represents the portion of the relationship between X and Y that is mediated by M. Note that *c* in the figure above is also called direct effect.

Mediation can be both complete or partial. With complete mediation, the independent variable has no direct effect on the dependent variables; its entire effect is indirect. With partial mediation, an independent variable has both direct and indirect effects on a dependent variable.

The most common approach discussed in the literature to analyzing mediation is the causal three-step variable model popularized by Baron and Kenny (1986). I use a similar approach to estimate the direct and indirect effect of education on well-being, illustrated as follows[78]:

$$WB = \alpha_1 + \beta_1 X + \lambda_1 + \varepsilon_1 \qquad (A1)$$

$$M = \alpha_2 + \beta_2 X + \lambda_2 + \varepsilon_2 \qquad (A2)$$

$$WB = \alpha_3 + \beta_3 X + \beta_4 M + \lambda_3 + \varepsilon_3 \qquad (A3)$$

[77] Mediation refers to the transmission of the effect of an independent variable on a dependent variable through one or more other variables (Edwards and Lambert, 2007).
[78] For brevity, results for equation A2 are not reported in my analysis.

Where WB is well-being, X is education variable, and M is the mediator variable[79]. The purpose of equations (*A1*) (*A2*), and (*A3*) is to test four similar conditions as proposed by Baron and Kenny (1986).

i) β_1 is statistically significant

ii) β_2 is statistically significant

iii) β_4 is statistically significant.

iv) β_3 is not statistically significant

If the model satisfies all four conditions mentioned above, then it indicates complete mediation, whereas if the model meets only the first three conditions, then it indicates partial mediation. My model in chapter 1 hypothesizes partial mediation, i.e., it hopes to satisfy the first three conditions and not the last one. In other words, in my model 1.1, the estimated coefficients of education and the mediator variable are statistically significant when both variables are included in the regression.

As discussed in the first section of chapter 1, the total effect of education equals the sum of the direct and indirect effects.

Total effect = Direct effect + Indirect effect

It follows that the difference between total and direct effect is the indirect effect.

Indirect effect = Total effect – Direct effect.

Two methods are commonly used in the literature to estimate the indirect effect. First, multiply the path that constitutes the effect (Sobel,1982). In other words, multiply the two coefficients from equation (A2) and (A3): the partial regression effect for M predicting WB, β_3, and the simple coefficient for X predicting M, β_2:

$$Indirect\ effect = \beta_3.\beta_2$$

[79] Note that in my model, I have four mediator variables, namely health, household income, marital status, and the number of children. However, each mediator variable is used separately in a different regression. Thus, the use of a simple three model approach is appropriate in my analysis.

Second, as proposed by Judd and Kenny (1982), subtract the partial regression coefficient obtained in equation (A3), β_3, from the simple regression coefficient obtained from equation (A1), β_1:

$$Indirect\ effect = \beta_1 - \beta_3$$

In Chapter 1, I use the second approach to estimate the indirect effect of education on well-being through mediator variables. Mackinnon, Warsi, and Dwyer (1993) confirm that both the methods discussed above yield identical values of the indirect effect.

To summarize, in my results (reported in Table 1.3), the reduction in the association between education and well-being when the mediator variable is controlled is equivalent to the indirect effect of education on well-being as transmitted through the mediator variable.[80]

[80] It is important to note that in my paper, I only estimated the indirect effect of education on well-being, but did not estimate the standard error of the indirect effect to test the effect. However, a standard way to compute the standard error is to divide the value of $\beta_3.\beta_2$ by the square root of the estimated variance of the product. For a detailed discussion on this, refer to Jeffrey R. Edward (2007).

A.4. The distribution of educated people in the World Values Survey and the World Bank dataset

It is likely that the results in the Table 1.4 can be driven by two possible factors:

First, WVS may likely oversample educated people, especially in low-income countries, because they can easily understand the survey questions. However, such selection bias is unlikely to affect my results, because, in my model 1.1, the variable education is categorical; i.e., 0 if primary education (omitted variable), 1 if secondary education, and 2 if university education. Therefore, the result shows how well-being measures of two reported categories are different from the omitted category. Thus, my result shows the *relative differences* in well-being between primary vs. secondary educated and primary vs. university educated. Moreover, in my dataset, the sample among the three education categories are fairly distributed across all sets of countries (see Table 1 Panel B for details). It implies that the WVS dataset represents individuals across all education levels, and not particularly with one education level *per se*.

Second, the distribution of the education categories in my sample may not represent the actual or accurate distribution from the entire population. To test this, I compared the sample distribution of education categories of the WVS dataset with the data from the World Bank[81]. Summary statistics are provided in Table A.4.1 below.

Table A.4.1. Average percentage of individuals with primary, secondary and university education across three sets of countries in WVS and the World Bank dataset, 2005-2014

	Low-income		Middle-income		High-income	
	WVS	WB	WVS	WB	WVS	WB
Primary (%)	35.32	36.00	40.83	51.55	28.03	35.11
Secondary (%)	41.28	23.02	38.36	21.55	34.97	33.40
University (%)	23.40	17.01	20.72	13.62	36.97	22.68

Notes: Table A.4.1 reports the average percentage of individuals with primary, secondary and university education across three sets of counters in the World Values Survey (WVS) and the World Bank (WB) datasets. The data are pooled across 43 countries (14 low-income countries, 13 middle-income countries, and 16 high-income countries) between the year 2005-2004. I choose the list of the countries and the year based on the data available in the World Bank dataset.

The summary report in Table A.4.1 shows that, on average, there are some variations in data distribution between these two data sets. In other words, the distribution of primary educated is

[81] It is assumed that the data from the World Bank is representative of the entire population of a country.

lower in the WVS as compared to the World Bank dataset, while the distribution of secondary and university-educated are higher in the WVS than in the World Bank dataset across all three groups of countries. Although WVS has under-sampled primary educated and oversampled secondary and university educated, the pattern is consistent across all three sets of countries. In addition, as mentioned above, the education variable in my model 1.1 is categorical. Thus, I believe, such discrepancies in data is unlikely to bias my result.

Furthermore, there can be various possible reasons for the difference in data distribution across these two data sets. First, the survey questions may vary across the two data sets. For example, WVS reports the highest level of education attended by an individual, whereas the World Bank reports the data on whether the particular level of education is completed or not. Second, the categorization of education levels may vary between the two data sets. For example, in the WVS data, secondary education is categorized as "incomplete/complete secondary: technical/vocational type," and "completed secondary: university preparation type." The university education is reported as "university without degree" and "university with degree." Primary education as "primary complete" or "primary incomplete." While in the World Bank, the primary education refers to the number of grades (years) in primary, secondary education is categorized as eight to 12 years of education in school, and university as four years or equivalent levels of education beyond high school[82].Thus, comparing the WVS data with the World Bank data may not truly manifest the gap in WVS data.

[82]www.worldvaluessurvey.org ; https://data.worldbank.org/indicator/SE.PRM.DURS

Table A.5: Statistical-test (T-test): to test the significance level of education coefficient

	Panel A		**Panel B**			
	Univ - Sec.		***Sec^{i} - Sec***		***Uni^{i} - Uni***	
	P-value	***t***	**P-value**	***t***	**P-value**	***t***
Main model	0.00	4.11	n/a		n/a	
without children	0.00	5.51	0.735	-0.3	0.612	-0.5
without employment	0.00	6.52	0.846	0.19	0.526	0.64
without marital status	0.00	5.49	0.846	0.05	0.526	-0.2
Without health status	0.00	5.89	**0.041**	**2.06**	**0.003**	2.97
without income	0.00	11.17	**0.00**	**8.19**	**0.00**	5.76

Panel C		
	Uni - Sec	
	P-value	*t*
High-income	0.00	4.09
Middle-income	0.040	2.10
Low-income	0.00	4.99
Wave 3	0.027	2.28
Wave 4	0.002	3.19
Wave 5	0.001	3.43
Wave6	0.002	3.32

p is p-value*; t* is t-statistic*s. Sec* is secondary education*; Uni* is university education.
Sec. represents coefficient for secondary education with all control variables.
Uni. represents coefficient for university education with all control variables.
Sec^{i} represents coefficient for secondary education without other control variables, respectively
Uni^{i} represents coefficient for university education without other control variables, respectively

Appendix B

Appendix to Chapter 2

Table B.1: Description and sources for the dependent and independent variables in chapter 2

Variable	Definition	Data Source/ Survey Questions
WB	Self-declared life-satisfaction level from 1 (not at all satisfied) to 10 (very satisfied)	(WVS): All things considered, how satisfied are you with your life as a whole these days? Using this card on which 1 means you are "completely dissatisfied" and 10 means you are "completely satisfied" where would you put your satisfaction with your life as a whole? (Code one number):
Age	Age of the respondent in year	(WVS): Can you tell me your year of birth, please?
Female	DV which takes the value 1 if the respondent is female, 0 otherwise	(WVS): (Code respondent's sex by observation)
Education level	Categorical variable which takes value of 0,1,2,3,4 for no-formal education, elementary, secondary and university education level respectively.	(WVS): What is the highest educational level that you have attained?
Education dummy	DV which takes the value of 1 (higher education) if the respondent has secondary or university level of education, and 0 (basic education) otherwise.	(WVS): What is the highest educational level that you have attained?
Marital-status	Categorical variable which takes value of 0,1 and 2 for other, married and single respectively. Other includes Divorced, Separated and Widowed.	(WVS): Are you currently (*read out and code one answer only).*
Employment Status	Categorical variable which takes value of 0,1,2 and 3 for other, employed, self-employed and unemployed respectively. Other includes retired, housewife, students, and others.	(WVS): Are you employed now or not? (code pone answer*)*
No. of Children	Categorical variable which takes value of 0,1,2 and 3 for no-child, one-child, two-child, and three or more child respectively.	(WVS): Have you had any children? (code 0 if no, and respective number if yes).
Child dummy	DV which takes the value 1 (yes) if respondent has any children and 0 (no) otherwise.	(WVS): Have you had any children? (code 0 if no, and respective number if yes).
Income level	Categorical variable which takes value of 0,1 and 2 for low, middle- and high-income level, respectively. Low includes responses (1-3), middle includes responses (4-6) and high includes responses (7 -10).	(WVS): We would like to know in what group your household is (1 indicates the lowest income group and 10 the highest income group in your country). Please, specify the appropriate-ate number, counting all wages, salaries, pensions and other incomes that come in. (Code one number):
Self-Perception	DV which takes the value 1 (yes) if the respondent answer strongly agrees with the statement (on the right), 0 (no) otherwise.	WVS: For each of the following statements I read out, can you tell me how strongly you agree or disagree with each. Do you strongly agree, agree, disagree, or strongly disagree? "On the whole, men make better business executives than women do."
Tradition	DV which takes that value 1(yes) if the respondent answers very much like me, or like me to the statement (on the right), 0 otherwise	WVS): For each description, please indicate whether that person (briefly describe some people) is very much like you, like you, somewhat like you, not like you, or not at all like you? "Tradition is important to this person; to follow the customs handed down by one's religion or family".

Appendix C

Appendix to Chapter 3

Table C.1. Description and sources for the dependent and independent variables in chapter 3

Variables	Variables Definitions	Data Source
LS	Life Satisfaction of business owners	Gallup World Poll (GWP); calculated as the average life satisfaction for business owners.
Per_O	Percentage of business owners	Gallup World Poll (GWP); calculated as the percent of business owners in the Gallup sample.
GNI	Gross National Income per capita, World Bank Atlas method (current US$).	World Bank national accounts data, and OECD National Accounts data files.
LogGni	Logarithm of GNI per capita, Atlas method (current US$)	World Bank
DTF	Distance to Frontier measuring the quality of business environment*.	World Bank http://www.doingbusiness.org
Unemployment	Share of the labor force that is without work but available for and seeking employment.	International Labor Organization, Key Indicators of the Labor Market database. (WB)
Corruption	Corruption is indicated on the scale of 0 (highly corrupt) and 100 (very clean).	Transparency International
Credit	Private credit by deposit money banks and other financial institutions to GDP (%)	Global Financial Development database, (World Bank)

* The distance to frontier score captures the gap between an economy's performance and a measure of best practice across the entire sample of 36 indicators for 10 Doing Business topics (the labor market regulation indicators are excluded). An economy's distance to frontier score is indicated on the scale from 0 to 100, where 0 represent the worst performance and 100 the frontier (Doing Business Report 2016).

Figure C.1. Distribution of the percentage of business owners across countries with different levels of Distance to Frontier (DTF), 2011-2015

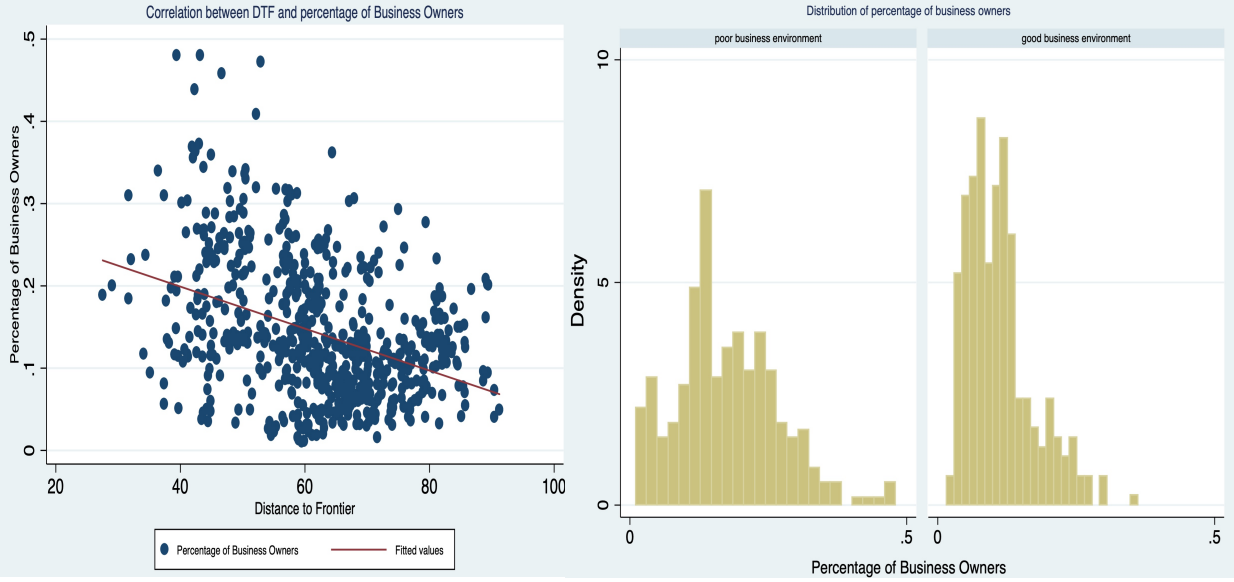


Figure C.1: The left panel shows the correlation between the percentage of business owners and distance to frontiers. Figure C.1: Right panel shows the distribution of the percentage of business owners across countries with low and high DTF: i.e., poor and good business environment. For this analysis, countries below the mean value of DTF, 60.91, are considered as countries with a poor business environment, and those countries above the mean of DTF as a good business environment.

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